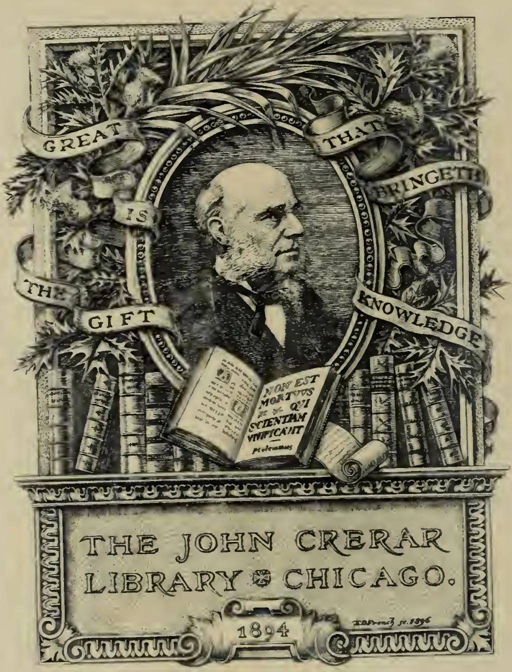

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THE COLORADO AGRICULTURAL COLLEGE

AGRICULTURE AND MECHANIC ARTS

1913 – 1914

FORT COLLINS
COLORADO

e.

"I, a wandering student, seeking knowledge, came knocking at the gates of the Colorado Agricultural College, and it took me in," helped me to become an efficient workman, "filled me with inspiration, and when I left its doors, the kindly people of the state stretched out welcoming hands and gave me a man's work to do."

"The youth are in no way adding more lustre to their nation's flag than by each making the most of himself."—Proctor

Thirty-fourth Annual Register of the
Officers and Students

Withdrawn

OF THE

Colorado Agricultural College

Agriculture and Mechanic Arts

PROSPECTUS FOR 1913-1914

FORT COLLINS, COLORADO

Series XIII Number 1
Entered at the Post Office at Fort Collins, Colorado, as Second-Class Matter

1140

CALENDAR

Entrance Examinations, Tuesday, September 2, 1913
Registration of Students, Tuesday, September 2, and Wednesday, September 3, 1913
First Semester begins, Thursday, September 4, 1913
School of Agriculture begins October 7, 1913
Mid-Semester Report, October 31, 1913
Thanksgiving, Thursday, November 27, 1913
Registration for Second Semester, Thursday, December 18, 1913
Christmas Vacation begins Saturday, December 20, 1913
Christmas Vacation closes Sunday, January 3, 1914
Farmers' and Housekeepers' Week, January 5-10, 1914
Farmers' Congress, January 9-10, 1914
First Semester closes Saturday, January 17, 1914
First Term School of Agriculture closes Saturday, January 17, 1914
Second Semester begins Monday, January 19, 1914
Second Term School of Agriculture begins Monday, January 19, 1914
Lincoln's Birthday Exercises, February 12, 1914
Washington's Birthday Exercises, February 22, 1914
Mid-Semester Report, March 27, 1914
School of Agriculture closes Friday, April 3, 1914
Spring Vacation, April 5-11, 1914
May Day Carnival, May 2, 1914
College Day, Friday, May 15, 1914
Memorial Day, Saturday, May 30, 1914
Baccalaureate Sermon, 8 p. m., Sunday, May 31, 1914
Commencement Exercises of Literary Societies, 8 p. m., Monday, June 1, 1914
Junior Class Day Exercises, 8 p. m., Tuesday, June 2, 1914
State Board of Agriculture meets Wednesday, June 3, 1914
Senior Class Exercises, Wednesday, June 3, 1914
Commencement Exercises, Thursday, June 4, 1914
Reunion of Alumni, 8 p. m., Thursday, June 4, 1914
Second Semester closes Thursday, June 4, 1914

First Semester (1914-1915) begins September 3, 1914

THE STATE BOARD OF AGRICULTURE

HON. FRANKLIN E. BROOKS	Colorado Springs, 1915
HON. JARED L. BRUSH	Greeley, 1915 1917
HON. JOHN C. BELL	Montrose, 1917
HON. T. J. EHRHART	Centerville, 1919
HON. CHAS. PEARSON	Durango, 1919
HON. A. A. EDWARDS	Fort Collins, 1921
MRS. J. B. BELFORD	Denver, 1921
PRESIDENT CHAS. A. LORY GOVERNOR E. M. AMMONS	Ex-officio

OFFICERS

HON. A. A. EDWARDS	President
HON. JARED L. BRUSH	Vice-President
L. M. TAYLOR	Secretary
C. H. SHELDON	Treasurer

The reorganization meeting of the State Board of Agriculture will be held April 9, 1913.

EXECUTIVE COMMITTEE

A. A. EDWARDS J. L. BRUSH E. M. AMMONS

THE STATE BOARD OF AGRICULTURE

The State Board of Agriculture was created by the General Assembly in 1879. It consists of eight members, besides the Governor of the State, and the President of the State Agricultural College, who are members, ex-officio. The Governor by and with the consent of the Senate, on or before the third Wednesday of January of each biennial session of the General Assembly, appoints two members of the Board to fill the vacancies that next occur.

Originally, the Board was created to have general control and supervision of the State Agricultural College, the farm pertaining thereto, and the lands which may be vested in the college by the state or national legislature, and of all appropriations made by the state for the support of the same.

The duties of the Board have, from time to time, been increased by the General Assembly; not only does it now act as the Board of Control of the State Agricultural College and the Agricultural Experiment Station, and of the secondary School of Agriculture, maintained at the college, the so-called Colorado School of Agriculture, but the Eighteenth General Assembly also made it the Board of Control of the secondary Schools of Agriculture at Fort Lewis, near Durango, and at Grand Junction, on properties, formerly Indian schools, that were turned over to the State of Colorado by act of Congress March 3d, 1909. The Seven-

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teenth General Assembly created the State Fair Board, consisting jointly of the State Board of Agriculture and the State Board of Horticulture; and the Eighteenth General Assembly gave to the State Board of Agriculture the powers of a State Board of Forestry, in addition to its other duties.

OFFICERS OF ADMINISTRATION, AND THE FACULTY

CHAS. A. LORY, M. S., LL. D. (University of Colorado), President
Residence, 903 Stover Street

S. ARTHUR JOHNSON, M. S. (Rutgers), Associate Professor of Zoology and Entomology, and Dean of the Faculty
Residence, 612 Elizabeth Street

VIRGINIA H. CORBETT, B. L., M. Ph. (Iowa State College), Associate Professor of History and English, and Dean of Women
Residence, 428 W. Laurel Street

CLARENCE P. GILLETTE, B. S., M. S. (Mich. Agr. College), Professor of Zoology and Entomology, and Director of the Agricultural Experiment Station
Residence, 620 Elizabeth Street

C. H. HINMAN, A. B. (University of Nebraska), Superintendent of Extension
Residence, 224 Elizabeth Street

L. M. TAYLOR, Secretary of the State Board of Agriculture and of the Faculty, and Purchasing Agent
Residence, 304 E. Myrtle Street

JAMES W. LAWRENCE, M. E. (C. A. C.), Professor of Mechanical Engineering
Residence, 206 W. Myrtle Street

WILLIAM P. HEADDEN, A. M. (Dickinson), Ph. D. (Giessen), Professor of Chemistry and Geology, and Chemist to the Experiment Station
Residence, 120 W. Magnolia Street

EDWARD B. HOUSE, B. S. (E. E.) (Univ. of Mich.), M. S. (C. A. C.), Professor of Civil and Irrigation Engineering
Residence, 802 Elizabeth Street

GEORGE H. GLOVER, B. S., M. S. (C. A. C.), D. V. M. (Iowa State College), Head of the Division of Veterinary Medicine
Residence, 608 S. Howes Street

WILLIAM RUSSELL THOMAS, A. B. (Williams), Litt. D. (Denver Univ.), Associate Professor of Constitutional History and Irrigation Law
Residence, 123 W. Magnolia Street

B. F. COEN, B. L. (Univ. of Wisconsin), Head of Department of English and History, and Professor of English
Residence, 1105 Remington Street

*S. L. MACDONALD, S. B. (Univ. of Chicago), Professor of Mathematics
Residence, 424 W. Olive Street

GEORGE L. SCOTT, Major, U. S. A. (Ret.) (West Point Military Academy), Professor of Military Science and Tactics
Residence, 821 Peterson Street

GEORGE E. MORTON, M. L. (Milton College, Wis.), B. S. (C. A. C.), Professor of Animal Husbandry
Residence, 220 Elizabeth Street

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*Leave of absence for one year. Teaching and pursuing graduate work at Columbia University.

BURTON O. LONGYEAR, B. S. (Mich. Agr. College), Professor of Botany and Forestry, and State Forester
Residence, 628 Elizabeth Street

I. E. NEWSOM, B. S. (C. A. C.), D. V. S. (San Francisco Vet. College and Kansas City Vet. College), Professor of Veterinary Pathology
Residence, 412 W. Magnolia Street

C. L. BARNES, D. V. M. (N. Y. State Vet. College), Cornell University, Professor of Materia Medica
Residence, 828 Laporte Avenue

*B. F. KAUPP, M. S. (C. A. C.), D. V. S. (Kansas City Vet. College), Professor of Veterinary Pathology
Residence, 909 Smith Street

SARAH I. KETTLE, A. B. (Univ. of Colorado), Professor of Modern Languages
Residence, 619 S. Sherwood Street

H. E. KINGMAN, B. S. (C. A. C.), D. V. S. (Kansas City Vet. College), M. D. V. (McKillip's Vet. College, Chicago), Professor of Veterinary Surgery
Residence, 522 W. Laurel Street

ALVIN KEYSER, B. S., M. A. (Univ. of Nebraska), Chairman of Division of Agriculture, Professor of Agronomy, and Farm Manager
Residence, Garfield and Stover Streets

*E. R. BENNETT, B. S., M. H. (Michigan Agr. College), Professor of Horticulture
Residence, 624 Elizabeth Street

T. M. NETHERTON, A. B., A. M. (William Jewell College; Univ. of Chicago), Principal of School of Agriculture
Residence, 715 Peterson Street

**F. A. DELAY, B. S. (E. E.) (University of Wisconsin), Professor of Physics and Electrical Engineering.

*RALPH PARSHALL, B. S. (C. A. C.), Assistant Professor of Civil and Irrigation Engineering
Residence, 926 Akin Street

FRED G. PERSON, B. A. and A. M. (Univ. of Colorado), Acting Professor of Physics and Electrical Engineering
Residence, 618 Remington Street

INGA M. K. ALLISON, E. B. (Univ. of Chicago), Professor in Home Economics
Residence, 326 Plum Street

CAREY E. VAIL, B. S. (Nebraska Wesleyan), M. A. (Univ. of Nebraska), Assistant Professor of Chemistry
Residence, 704 Remington Street

CHARLOTTE A. BAKER, Librarian
Residence, 600 Remington Street

D W. FREAR, B. S. A. (Univ. of Minnesota), Associate Professor of Agronomy
Residence, 704 Remington Street

W. W. ROBBINS, B. A., M. A. (Univ. of Colorado), Assistant Professor of Botany and Forestry
Residence, 424 W. Olive Street

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*Resigned
**On Leave of Absence.

**G. H. GRAVES, B. P. (Earlham), A. B. (Haverford), A. M. (Columbia), Instructor in Columbia University
Residence, Y. M. C. A.

H. E. DVORACHEK, B. S. A. (Univ. of Minnesota), Associate Professor of Animal Husbandry
Residence, 317 Edwards Street

A. W. WHITEHOUSE, V. S. (Ontario Vet. College), D. V. S. (C. A. C.), Professor of Veterinary Anatomy
Residence, 612 S. Sherwood Street

CHAS. S. MEAD, B. S. (Ohio State Univ.), M. A., Ph. D. (Columbia Univ.), Assistant Professor of Zoology and Entomology
Residence, 1102 Laporte Avenue

C. G. SARGENT, B. A. (Parsons College), Rural School Visitor
Residence, 901 Smith Street

OLIVER PENNOCK, B. S. (C. A. C.), Assistant Professor in Civil and Irrigation Engineering
Residence, Bellvue, Colorado

INSTRUCTORS AND ASSISTANTS

BURNETT, WILLIAM L., Curator of the Museum
Residence, 525 S. Howes Street

BUTLER, JESSIE, B. S. (C. A. C.), Assistant in Domestic Art
Residence, 121 W. Olive Street

CAMMACK, ALBERT, B. M. E. (Iowa State College), Instructor in Mechanical Engineering
Residence, 510 S. Howes Street

CARPENTER, CHARLOTTE E., Instructor in Domestic Art and Domestic Science
Residence, 639 S. College Avenue

CRABBE, J. BLAINE, A. B. (Ohio Wesleyan Univ.), B. O. (Emerson School of Oratory), Instructor in History and English
Residence, 421 E. Laurel Street

CRAIG, ELEANOR, Ph. B. (Univ. of Chicago), Instructor in History and English
Residence, 506 S. College Avenue

CRAIN, L. D., B. M. E. (Purdue Univ.), M. M. E. (Cornell), Instructor in Mechanical Engineering
Residence, 121 N. Sherwood Street

DILTS, E. ARLENE, Assistant in Library
Residence, 514 Remington Street

DURWARD, MARGARET E., Ph. B. (Univ. of Chicago), Instructor in Mathematics
Residence, 1022 S. College Avenue

DILLON, MORRIS N., B. A. (Earlham College), Secretary to the President
Residence, 637 S. Howes Street

ERDMANN, JULIUS (College of Horticulture, Roestritz, Germany), Gardener and Instructor in Floriculture and Landscape Gardening
Residence, Fort Collins, S. E.

**Exchange Professor with Columbia University.

FRISBEE, JEROME B., B. S. A. (Iowa State College), Instructor in Farm Mechanics Residence, 809 Whedbee Street

GILBERT, G. A., B. S. (Mich. Agr. College), Instructor in Dairying and Animal Husbandry Residence, 310 Edwards Street

GLIDDEN, CLARA A., B. A. (Ohio Wesleyan Univ.), Second Assistant in Library Residence, 225 S. College Avenue

HAGGART, MARGARET H., B. S. (Kansas State Agri. College), Instructor in Home Economics Residence, 1022 S. College Avenue

HAYNES, MIRIAM M., B. S. (C. A. C.), Assistant in Home Economics Residence, 320 W. Myrtle Street

HERTWIG, RAYMOND, B. S. (Purdue Univ.), Instructor in Chemistry Residence, 629 S. Howes Street

*HILLS, ROY O., A. B. (Univ. of Colorado), Y. M. C. A. Secretary Residence, City Y. M. C. A.

HUGHES, H. W. (Univ. of Oklahoma), Physical Director Residence, 1020 S. College Avenue

HUNT, LILLIAN, B. S. (C. A. C.), Assistant in Mathematics Residence, 325 E. Mulberry Street

*LANGRIDGE, FRED N., M. E. (C. A. C.), Instructor in Mechanical Engineering Residence, 637 S. Howes Street

MARSHALL, JAMES D., B. S. A. (University of Wisconsin), Instructor in Agronomy Residence, 326 Edwards Street

OLIVER, B. M., A. B. (Texas University), Y. M. C. A. Secretary Residence, City Y. M. C. A.

PIERCE, HIRAM, Instructor in Carpentry Residence, 510 S. Howes Street

RANKIN, FRED J., B. M. E. (University of Kentucky), Instructor in Electrical Engineering Residence, 708 Peterson Street

ROSS, S. I., B. S. (M. E.) (Oklahoma A. & M. College), Instructor in Mechanical Engineering Residence, 629 S. Howes Street

*SMITH, S. VAN, B. S. (Kansas Agri. College), Instructor in Horticulture Residence, 407 S. College Avenue

SMILEY, GRACE F., B. S. (Ohio State University), Instructor in Domestic Art Residence, 527 Remington Street

UPSON, MRS. AGNES C., Assistant Director Physical Training, in Charge of Physical Training for Women Residence, 318 Peterson Street

VAPLON, W. E., Poultryman, and Instructor in Animal Husbandry Residence, College Farm

WELDON, GEORGE P., B. S. (C. A. C.), Deputy State Entomologist, Instructor in Department of Zoology and Entomology Residence, 311 S. Howes Street

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*Resigned.

STUDENT ASSISTANTS

BRIGGS, ZELMA, Student Assistant in Home Economics
Residence, 606 S. Howes Street

COFFIN, ROY G., Student Assistant in Chemistry
Residence, 1201 Laporte Avenue

GOEDER, FRANK P., Student Assistant in Physics
Residence, 626 S. Meldrum Street

CONSERVATORY

EMSLIE, ALEXANDER, Director C. A. C. Conservatory of Music
Residence, 644 Peterson Street

EMSLIE, MRS. ALEXANDER, Directress of Piano Department
Residence, 644 Peterson Street

REYNOLDS, HOWARD S., Teacher of Violin and Harmony
Residence, Y. M. C. A.

RIST, CHARLOTTE, Assistant Teacher of Vocal and Public School Music
Residence, 609 S. College Avenue

GRIFFITHS, LULU, Assistant Teacher of Piano
Residence, 725 Mathews Street

DOUGLAS, IRMA, Accompanist Residence, 428 S. Howes Street

FOLTZ, BENNETT W., Instructor in Cornet

RUNGE, W. E., Instructor in Clarinet, and Leader of the Military Band
Residence, 511 S. College Avenue

FACULTY COMMITTEES

Executive

S. Arthur Johnson
J. W. Lawrence
Geo. H. Glover
B. F. Coen
Ralph Parshall
Virginia H. Corbett
Alvin Keyser
T. M. Netherton

Social

Virginia H. Corbett
W. W. Robbins
I. E. Newsom
Inga M. K. Allison
T. M. Netherton

Rural Education

S. Arthur Johnson
B. F. Coen
T. M. Netherton

Catalogue

B. F. Coen
S. Van Smith
B. O. Longyear

Athletic

H. W. Hughes
Albert B. Cammack
Ralph Parshall

Advanced Degrees

Wm. P. Headden
J. W. Lawrence
W. R. Thomas

THE MISSION OF THE AGRICULTURAL COLLEGE

The mission of the Agricultural College as defined by the Congressional act which called it into being is "to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." This class of educational institutions had its origin in the provisions of an act of Congress, approved July 2, 1862, and popularly known as the "First Morrill Bill"; and for its establishment and maintenance in each state which availed itself of the provisions of the law a donation of 30,000 acres of land for each senator and representative in Congress was made, Colorado receiving 90,000 acres. The sales of this land, and the revenue therefrom, constitute a permanent endowment fund.

In 1890, Senator Morrill, of Vermont, secured the passage of a second act, known as the "Second Morrill Bill," appropriating a maximum of $25,000 (the Morrill fund) annually for the support and maintenance of these colleges, which act was recently amended so that the maximum sum would be $50,000 a year. This maximum was reached in 1911. This act also made certain provisions as to the line of studies for which this money might be expended, enacting that it should be used "only for instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic sciences." This act has been construed by the National Commissioner of Education, in a circular approved by the Secretary of the Interior, and prescribes the studies which these colleges may teach in order to avail themselves of the benefits of the law.

By acts approved January 27, 1879, and April 6, 1891, the general assembly of Colorado gave "full and complete acceptance, ratification

Source of Irrigation Waters

and assent" to "all of the provisions, terms, grants, and conditions and purposes" of these congressional acts, thus creating a perpetual contract between the state of Colorado and the government of the United States under the terms of which, in consideration of the grant of 90,000 acres of land for the creation of an endowment fund, and the payment of the Morrill fund annually, the state bound itself to maintain an institution at which instruction should be given in military tactics, agriculture, mechanic arts, the English language, economics, and the various branches of mathematical, physical, and natural science.

The requirements of this contract, both in letter and spirit, are being faithfully observed, and the duties it imposes are being fully performed by the Colorado Agricultural College.

Experiment Station.—The colleges established under the Morrill bill were soon confronted by the necessity of doing experimental work and original research in agriculture to supplement and extend the agricultural knowledge of the times. This need was recognized by Congress and was met by the establishment of the experiment stations in an act approved March 2, 1887, generally known as the Hatch Act. This act appropriated $15,000 annually—the Hatch fund—(no part of which could be expended for instruction) for research, investigation and experiment along the lines of agriculture, horticulture, and animal husbandry, and in the arid states the water problems which arise out of their systems of irrigation. The results of these investigations and of the practical experiments made are published in the station bulletins issued from time to time as the investigations are completed. The bulletins that have been issued from this station cover a wide range of industrial topics, and are among the most notable and valuable contributions that have been made to the science of agriculture.

In 1906, Congress supplemented this "Hatch fund" of $15,000 a year by another, which has become known as the "Adams fund." In accordance with the provisions of the law, the experiment station received $5,000 in 1906, and was to receive a sum increased by $2,000 each year until the total reached $15,000 annually. This money is exclusively for the work of original research, and the restrictions placed about its use are both narrow and severe.

It is well, perhaps, that this is so, since the results of the careful and intelligent expenditure of this sum—$30,000—by every experiment station in the land promise the elevation of agriculture to its true place among the great industrial sciences, and to reveal and determine for the stockman, farmer, and the fruit grower, many facts and problems which will have an important bearing upon all future products of the soil.

Extension Work.—Another function of the Agricultural College is Extension Work, that is, carrying the work of the college to the people. This is done by means of farmers' institutes and short courses held at various central points in many sections of the state, and by means of information bulletins. The institutes are from one to three days duration. The short courses occupy an entire week, and permit a more continuous and detailed presentation of the practical topics discussed by expert lecturers and professors. The leading topics presented at these institutes and short courses vary with the leading form of industry in the locality where they are held. If it be farming purely, then the subjects presented relate especially to field crops; if it be fruit growing, then subjects which concern the orchard and garden; if it be stock growing, then subjects which bear upon animal husbandry.

The work of the rural school and country life generally is given special attention. Rural school visitors cooperate with county superintendents and teachers in developing courses in agriculture and household arts for the rural schools.

The beneficial effects of this extension work are already felt and are generally acknowledged in Colorado. To the practical information imparted, the timely hints given, the valuable suggestions made by the Agricultural College experts at these institutes and short courses, many individuals—whole communities even—owe improved methods and more prosperous conditions.

These, then, are the three functions of the Colorado Agricultural College: Education, experimental work and original research, and the extension of the knowledge thus gained to the homes of the people. To enable the college to fulfill its mission, the national government contributes the Morrill fund in addition to the permanent land grant funds for educational work, while the state provides an income of one-fifth of a mill on the assessed valuation, and legislative appropriations are made from time to time for specially designated purposes.

For experiment station work, the national government contributes the Hatch and Adams funds, while the state provides for special investigations by legislative appropriations.

For extension work, a special appropriation is made by the state legislature.

CAMPUS

Standing upon the campus of the Colorado Agricultural College, the visitor is readily impressed with the spirit and purpose of the institution as he gazes with delight upon the scenes by which he is surrounded. Near at hand are the main administration building, in whose various additions may be read the growth of the college and its need for more room; the chemical, the electrical, the home economics, and the horticultural buildings, the library, and the mechanical engineering building, whence comes the buzz of machinery, enlivened by a real anvil chorus.

To the south, across the women's athletic field, rises agricultural hall, to the west of which is the cottage of the farm superintendent, and towering above the trees, the barns with their thoroughbred cattle, and sheep, and swine. Nearby are the new poultry yards and the cottage of the expert in charge. Directly to the west rise the white walls of the new irrigation building, all the more perfectly outlined by the dark blue foothills which seem to rise directly behind. Just beyond stretches the highly cultivated college farm of 320 acres, while along the immediate base of the foothills is the great pasture field of 1,350 acres.

Half a mile to the east of the campus are the barns and paddocks of the Government Horse Breeding Station.

Such is the campus and plant of the college, whose environs constitute one of the most beautiful and attractive agricultural landscape views to be found in the West—the highly cultivated prosperous valley of the Cache La Poudre, with its farms and gardens, its orchards, canals and reservoirs, a region where agriculture by irrigation has reached its highest and most progressive development. No more commanding or appropriate location could have been chosen for an agricultural college.

Nor should mention be omitted of Fort Collins, in the suburbs of which the college is situated; a growing, thriving city, which reflects in its commercial, social, educational, and religious life, the best elements of modern American civilization; a city in which no saloons or other vicious resorts are tolerated; which takes a just pride in the college

Administration Building from the North

and its work; which extends a cordial welcome to students and throws about them the most wholesome influences, and which so conducts its municipal affairs as to make it an ideal college town.

Such is the Colorado Agricultural College; such its equipment and appointments; such its location and environment, which combine to reflect the spirit and purpose which pervade its halls and give zest and inspiration to the instruction therein given. Sharing in its advantages and the opportunities that it assures, is the free gift that is now proffered to the boys and girls of Colorado. To those who avail themselves of its privileges may be guaranteed a thorough training in any of the industrial arts which come within its scope, a broad and generous culture, a higher plane of citizenship, a clearer vision of life's ideals, whose influences conduce to more perfect types of manhood and womanhood, to a more prosperous commonwealth, a greater republic, a larger measure of individual independence and happier homes.

BUILDINGS

Main College Building.—The largest building on the grounds. It contains offices of the President, Principal of School of Agriculture, Secretary, Registrar, Superintendent of Extension Work, Physical Director, Commandant, and Young Men's Christian Association; offices and classrooms of the Departments of English and History, Mathematics, and Modern Languages; an auditorium with opera chairs for seating 900 persons, and an armory, 40x72 feet, a gymnasium, and a laboratory used by the Department of Physics and Electrical Engineering.

Chemical Building.—This building contains the professor's suite of rooms, including private laboratory and balance room; two student laboratories, with a total of 112 individual lockers, allowing 56 stu-

Administration Building from the South

dents to work at the same time; a lecture room for chemistry, and one for geology, a museum of rock and mineral specimens, and the chemical laboratories of the Experiment Station.

Electrical Engineering Building.—Three floors providing offices, classrooms, and work rooms for instruction in physics and in electrical engineering.

Conservatory of Music.—This is a small but very attractive building with two floors, containing classrooms, offices, and a reception room.

The Hall of Household Arts.—The gift of Senator Simon Guggenheim. Is almost entirely occupied by the Department of Home Economics. The building as a whole contains about twenty rooms. The first floor is given over to offices, the departmental library, food laboratories, dining-room, locker-room, and laundry. On the second floor are the office of the Dean of women, rest-room, headquarters of the Young Women's Christian Association, assembly room, sewing laboratories, and lecture rooms. The spacing and equipment provide adequately for individual work.

Horticultural Hall.—A well constructed and artistically designed building, with offices, classrooms, and laboratories for Departments of Horticulture, Botany and Forestry, an office for the potato specialist of the Experiment Station, and a well equipped laboratory for bacteriological research that is being conducted under the Adams act.

Mechanical Engineering Building.—One of the largest buildings on the grounds. It contains offices and classrooms for the various classes needed in a thorough course in mechanical engineering, a machine shop, well supplied with the tools and apparatus needed for instruction in large classes in all lines of machine work; a modern blacksmith shop, with 42 forges and other equipment; a foundry, with full equipment for thorough instruction work with iron, brass, and bronze; a bench and wood-working room, with 47 benches and full sets of tools, wood-working machinery, including power planers and lathes; and a department library of 1,000 volumes.

Mechanical Engineering Laboratory.—This laboratory is furnished with apparatus and machines to give advanced students an opportunity to make investigations of the materials used in constructing buildings and machinery, and to make tests of boilers, engines, pumps, motors, and other mechanical appliances. A special feature is an extensive equipment for investigations along the lines of steam engineering and compressed air.

Civil and Irrigation Building.—This building is one of the best on the campus, new and modern in every way. In the basement is found the irrigation and hydraulic laboratories with all the equipment for experimenting with flowing water, with pumps, meters, etc. The cement laboratory and photographic dark rooms are also on this floor. The floor above, contains the experiment station offices, museum, and instrument room. On the second floor are the classrooms, departmental library, and offices of the professors of the department. The third floor is devoted to the draughting work. With its ceiling light, the blueprint apparatus, tables and filing cases, it makes an up-to-date room for this kind of work. The building cost $75,000, and with its equipment we can offer facilities for work in irrigation not equaled by any other college or university in the United States.

Civil and Irrigation Engineering Building

Agricultural Hall.—An attractive building, with three working floors, containing offices, classrooms, and libraries for the departments of Agronomy and Animal Husbandry, and offices for the horse specialist of the U. S. Department of Agriculture, and for the poultryman, and a large room well equipped for instruction in farm dairying.

Judging Pavilion.—Two classrooms, with side and overhead lighting, for instruction in judging horses, cattle, hogs, sheep, and poultry. This building was planned after a study of all the better buildings of its class in the United States, and is exceptionally well adapted for the work.

Greenhouse and Forcing Houses.—These are connected with Horticultural Hall and consist of two structures. One is for the use of students in propagating ornamentals, bedding stock, and for gardening under glass; and the other, modern in plan and detail, embraces the best that is known in greenhouse construction.

Veterinary Buildings.—The main offices of the Division of Veterinary Medicine are located in the Civil and Irrigation Engineering building as are also the Pathology museum, and two classrooms. A group of five buildings facing on Laurel street furnishes accommodations for hospital, pathology laboratory, pharmacy laboratory, dissecting room, small animal ward, classrooms, offices, etc.

Veterinary Buildings

Farm Buildings.—The college has large and well-planned barns for breeding horses, work horses, and dairy cattle; sheds for fattening cattle, a sheep barn, a large piggery, and several styles of individual hog houses; a plant for fattening 100 hogs at a time, a large farm machinery shed, farm blacksmith shop, a number of model poultry houses, and an incubator room.

Farm Mechanics.—Two floors devoted to classrooms and laboratories for instruction in operating, repairing, setting up, adjusting, and testing farm machinery, and steam traction and gasoline engines. The equipment is valued at $15,000.

Library.—This building furnishes stack room for 40,000 bound volumes, 50,000 unbound pamphlets and bulletins, storage and filing rooms, office for librarian and assistants, and a general reading room.

Zoological Building.—A two-story structure of white stone, providing classrooms, laboratories, and offices for instruction and investigation in entomology and other branches of biology; a museum, an insectary, and a heating plant for the building and for the Irrigation Engineering building.

EQUIPMENT

The equipment of the college is such as is needed to give thorough instruction in agronomy, animal husbandry, horticulture; entomology; forestry; civil, irrigation, electrical and mechanical engineering; home economics; general science and veterinary science.

The value of the apparatus, instruments, machines, books and live stock exceeds $150,000.

Geological Museum.—The material is unusually complete, representing all the important classes and varieties of rocks, a good working collection of the important rock-forming minerals, a collection of sections showing the microscopic structure and optical properties of various classes of rocks, a large and representative collection of ores, a beautiful collection of ornamental mineral materials and a collection of fossils and casts illustrating the life of every geological period.

Biological Museum.—Contains a collection of over 75,000 specimens of insects, a large collection of vertebrate and invertebrate animals, hundreds of charts and models, an extensive series of prepared microscopic slides, wax models showing the development of the frog, chick, and man, human skeletons, a manikin of the human body, and enlarged models of special parts of the body.

Pathology Museum.—The Pathology museum contains over 500 specimens of diseased organs and tissues of the domestic animals, and approximately 200 specimens of parasites that infest the domestic animals. These specimens are of inestimable value in teaching parasitology, physiology, pathology, and other branches pertaining especially to veterinary medicine.

Farm Equipment.—The herds of pure bred animals and the farm machinery, implements, tools, and dairy apparatus used for instructional purposes in agriculture are worth over $40,000.

Farm.—The college has 472 acres of land under irrigation, and 1,350 acres in pasture. The college farm affords an unusual opportunity for the study of practical farm and garden irrigation and modern farm management.

The U. S. Department of Agriculture and the College Experiment Station are jointly conducting an experiment in developing a superior type of American carriage horse. This experiment is attracting world-wide attention. The work is being conducted on the college farm, and students have the opportunity and are required to study its progress. There are over 70 choice carriage horses and colts now being used in this investigation, with model barns, sheds, paddocks, stable, and harness equipment.

Experiment Station.—The Agricultural Experiment Station of the college has a large and carefully selected equipment for investigation and research in soils, crops, stock feeding, plant and animal breeding, soil, plant and animal diseases, fruit and vegetable growing, insects, and irrigation problems; and is yearly spending $50,000 and upwards in practical investigations under Colorado conditions along these lines. **A study of the equipment and methods used in this work and of the results obtained is of inestimable value to advanced and graduate students.**

Shops and Laboratories.—The equipment used in class and laboratory work in mechanic arts, which includes civil, irrigation, electrical, and mechanical engineering, is worth $55,000.

COURSES OF STUDY

College Courses.—Courses in Agriculture, Mechanic Arts, Veterinary Medicine, Home Economics, and General Science are offered for high school graduates, or for those having equivalent preparation. In Agriculture the opportunity is given for specializing in Agronomy, Animal Husbandry, Entomology, Forestry or Horticulture. In Home Economics the opportunity is given for specializing in Domestic Art or Domestic Science. In Mechanic Arts, the opportunity is given for specializing in Civil and Irrigation Engineering, Electrical Engineering or in Mechanical Engineering.

Secondary Courses.—Three year courses of six months each, in agriculture, mechanic arts, and domestic science, are offered by the **School of Agriculture,** conducted by the college for grammar school (eighth grade) graduates, at least fifteen years of age, or for those having equivalent preparation. **Students who have completed the work offered in the School of Agriculture may enter the college after taking the intermediate year, which is offered in connection with the School of Agriculture for just that purpose.** Full description of these courses is given in the special **School of Agriculture catalogue,** which will be mailed upon request.

One Week Courses.—In January of each year, the college offers one week courses for farmers and housekeepers, open to all who wish to attend. These courses are under the direction of the Extension department and consist of special lectures and demonstrations with evening lectures on topics of general interest. Farmers' and Housekeepers' week for next year opens January 5th, 1913. Special circulars will be mailed on request.

ENTRANCE REQUIREMENTS FOR COLLEGE COURSES

Students are admitted to the college either upon certificates from an accredited high school or upon examination.

Certificates from schools not accredited will be considered as the merits of each case may warrant. **Students presenting a less number of credits than are required for college entrance, may enroll in the School of Agriculture.**

Applicants appearing late in the college year will be required to pass, in addition to the entrance examination, a further examination in the work already passed over by the students.

Fifteen units are required for admission. Students presenting more than fifteen credits required for entrance may, in certain cases, receive credit toward graduation, for the extra work done. A unit course of study is defined as a course covering a school year of not less than thirty-five weeks, with four or five (preferably five) periods of at least forty or forty-five minutes each, a week.

Mathematics	2
English	3
History	2
Science: Chemistry, 1; Physics, 1	2
Elective	6
	15

Electives may be chosen from the following: Mathematics, 2; Ancient Languages, 4; French, 3; German, 3; Spanish, 2; History, 2; English, 2; Science, 2; Drawing, 1; Psychology, ½ or 1; Political Economy, ¼ or 1; Shop Work, 1; Agriculture, 1; Domestic Science, 1. (Other electives offered will be considered by the faculty.)

Students who elect engineering must present three units of mathematics, or be registered conditionally until these units of mathematics are presented.

The Following High Schools are Accredited:

Alamosa High School
Arvada High School
Aspen High School
Berthoud High School
Boulder High School
Brighton High School
Brush High School
Canon City High School
Carbondale High School
Central City High School
Cheyenne County High School
Cheyenne (Wyoming) High School
Colorado City High School
Colorado Springs High School
Cripple Creek High School
Del Norte High School

Delta High School
Denver High School (East)
Denver Manual Training High School
Denver High School (North)
Denver High School (South)
Denver High School (West)
Douglass County High School
Durango High School
Eaton High School
Florence High School
Fort Collins High School
Fort Morgan High School
Fruita High School
Georgetown High School
Glenwood Springs High School
Golden High School
Grand Junction High School
Greeley High School
Gunnison County High School
Holly High School
Hotchkiss High School
Huerfano County High School
Idaho Springs High School
Julesburg High School
Lafayette High School
Lamar High School
Las Animas High School
Leadville High School
Littleton High School
Logan County High School
Longmont High School
Louisville High School
Loveland High School
Manitou High School
Monte Vista High School
Montrose County High School
Ouray High School
Palisade High School
Paonia High School
Phillip County High School
Pueblo High School, District No. 1
Pueblo High School, District No. 20
Rocky Ford High School
Saguache County High School
Salida High School
Silverton High School
South Canon High School
Trinidad High School
Telluride High School
Union High School, No. 1 (La Junta)
Victor High School
Wheat Ridge High School (Alcott)
Windsor High School
Miss Wolcott's School (Denver)
Wolfe Hall (Denver)
Yuma County High School (Wray)

GENERAL INFORMATION

Requirements for Graduation.—One hundred and sixty credits are required for graduation in the courses in Agriculture, Mechanic Arts, Home Economics, and General Science, of which six must be in military drill for men, or in gymnasium for women, and one hundred and twenty-four as prescribed in the course of study. Twenty to thirty credits are elective.

In Veterinary Medicine one hundred and sixty-nine credits are required for graduation. No credits are elective.

A Credit Defined.—One credit is given for one hour of lecture, or recitation work a week, or two hours in the laboratory, or three hours drill or gymnasium, carried satisfactorily throughout a semester.

Degrees.—The degree of Bachelor of Science is conferred upon the graduates of all courses except those in Veterinary Medicine. Graduates in this course receive the degree of Doctor of Veterinary Medicine.

Unclassified Students and Special Courses.—Unless there are strong and excellent reasons for it, a student will not be allowed to take a special course of study; and, in case it is allowed, the student must show that he is well qualified to pursue the studies selected by passing such examinations as the faculty may assign. No student will be allowed to change his course during the progress of the semester, nor will he be allowed to drop a study unless by permission of the Executive Committee.

Arriving at the College Depot

All applications for special courses of study must be made to the chairman of the Executive Committee by mail or otherwise, at least two days before the opening of the semester. Except under unusual conditions, it will be useless for any person to apply for a special course of study involving less work than is required of the students in the regular course.

Unclassified students who wish to become candidates for a degree, must fulfill all requirements for admission to the college, and must complete the required work in the regular manner.

Special Work For Those Who Desire to Train Themselves to Become Teachers.—In order to meet the growing demand for teachers of Agriculture, Mechanic Arts, Household Arts, and of the sciences closely related thereto, the technical courses of the college are supplemented by work in Psychology, History of Education, Theory and Practice of Teaching; and provision is made for practice teaching in the School of Agriculture, under competent supervision. This work satisfies the State Certification Law, which requires "professional training equivalent to at least one-sixth of a standard four years' college course in at least three of the following groups of subjects, one of which shall be Practice Teaching, to wit:

1. General Educational Psychology
2. History of Education
3. Science and Principles of Education
4. Practice Teaching and Special Methods
5. Organization and Management of Schools
6. Philosophy, Sociology, and Anthropology

State diplomas granted under the provisions of this act entitle the holders thereof to teach in the public schools of any county, city, town or district in the state without the necessity of any other examinations for a period of five years, unless sooner revoked by the State Board of Education." The diploma may be renewed at the end of five years.

There is an opportunity for teachers of experience to come to the college and fit themselves for more advanced positions, or for specializing in Agriculture, Mechanic Arts, and Household Arts, and earn part of their expenses by teaching one or more classes in the School of Agriculture. Special provision is made for students who have taken their professional training in other institutions of higher learning, especially the State Teachers' College of Colorado or the College of Education at the University of Colorado, and desire the technical training necessary to fit themselves as teachers of Agriculture, Mechanic Arts or Household Arts.

Senior Standing.—At the beginning of the senior year, each member of the senior class, before he will be considered a candidate for graduation, must show the faculty in what way it will be possible for him to make the required credits.

If, at the time of the mid-semester report of the second semester, a candidate for graduation shall have more than the regular number of hours yet to do, he shall no longer be considered eligible for graduation.

Advanced Standing.—Students entering the Agricultural College from other institutions, of higher learning, that require fifteen units for admission, will be given standing according to the following rules:

1. If such applicant has pursued a regular course of study at the former institution and completed the work taken, he will be given standing with the same class at this institution, and be required to complete work here at the rate of twenty credits for each semester's work yet to be done, but no student will be recommended for a degree who does not present credits for all the required work leading to such degree.

2. Students, coming from other institutions, who have not pursued a regular course of study at such institutions or who have not satisfactorily completed the work so far taken, will be given credit hour for hour for the work, completed and presented, in so far as that work applies to the course of study desired.

Graduate Work.—Opportunities for graduate work are offered in the following lines of scientific research: Hydraulics—including Irrigation and Drainage Engineering—Chemistry, Bacteriology, Mycology, Entomology, Plant Breeding, and High Altitude Agriculture. Students, having a bachelor's degree, who have prepared themselves for advanced work may become candidates. Two years will be required for an M. S. degree, over and above the regular requirements for the degree of B. S. At least one year must be taken at this institution.

There will be required one major and two minor lines of study. The major line of work will be so planned as to articulate with investigations being carried on by the Experiment Station and will afford the best possible training to prepare the student for good positions in the Agricultural Colleges and Experiment Stations of this and other countries.

This work is offered in the nature of a scholarship, the value of which is dependent on the time given as laboratory assistant.

Students may matriculate at any time, preferably in May or June, for most lines of work.

Full information will be sent on request.

Scholarships.—Two scholarships are awarded annually to each accredited high school of the state, one to a boy, the other to a girl. The scholarship is good for four years from date of award. It is not transferable and cannot be extended except by special vote of the Executive Committee of the State Board of Agriculture. Besides the honor it confers, it has the cash value of $40, payable $10 annually, in the remission of fees. The award is made upon the recommendation of the Principal of the High School and the City or District Superintendent of Public Instruction.

Registration.—Tuesday, September 2, and Wednesday, September 3, 1913, are devoted to examination and registration. New students will be met at the trains by committees of young men and women from the Young Men's and Young Women's Christian Associations, who will take them to the college at once for registration, and will assist them to find good homes and open for them the doors of college life. Students who fail to register on the dates set for registration will be charged an additional registration fee of $1.00.

Classes in Elective Subjects.—No class in an elective subject will be formed for less than four students.

Grades.—The passing grade is 70 per cent. All students who fail to make a standing of 55 per cent will be considered "failed," and will be required to take such subjects over again in class. Those making a standing of more than 55 per cent and less than 70 per cent will be considered "conditioned," and will be allowed one special examination before the subject is again taught, by which they may try for a passing grade of 70. In cases of studies extending over more than one semester, the student, if he has an average of 55 per cent, may be allowed to continue with his class, but must finally make a grade of 70 per cent in one special examination in each semester. If he falls below 55 per cent in average at the end of a semester, he will be dropped from the class and be required to take a lower subject.

Any student who shall have a semester standing of 90 per cent may be exempted from examination, and in that case his class standing shall be his semester average.

Chapel.—All students assemble twice a week, Mondays and Thursdays, at 9:50, in the auditorium of the main building, for chapel exercises. At the beginning of the year, seats are assigned. Attendance is required.

Tuition and Fees.—Tuition in all the regular classes of the college is free, but fees are charged in the Conservatory of Music, and of each veterinary student whose home is not in Colorado, a non-resident fee of $25.00 is charged.

Entrance Fee.—An entrance fee of $5.00 is required of every student, $2.00 of which is the library fee, and $3.00 of which will be paid by the Registrar to the Treasurer of the Athletic Association upon the written statement of the Secretary of the Associaion that the student has signed the constitution.

Laboratory fees are charged in certain courses to help defray the cost of materials used. These fees are stated in connection with the description of the different courses.

By unanimous vote, the Associated Students passed a resolution that $5.00 be collected, in addition to the regular registration fee, from each student; $1.00 to pay the annual subscription to the Rocky Mountain Collegian, and $4.00 to pay for a season ticket to all athletic events except the annual athletic smoker.

Graduation Fee.—By a resolution, of the State Board of Agriculture, passed in June, 1912, each student who has been elected by the Board to receive a degree, must, before the degree is conferred, pay a graduation fee of $5.00, or if the degree is conferred in absentia, $10.00.

Estimate of Expenses.—A conservative estimate of the necessary expenses of a student for a year in the institution is as follows:

Board	$125.00
Room	48.00
Books	25.00
Fees	12.00
Incidentals, including uniform for men, or gymnasium suits for the girls	90.00
	$300.00

About one-fifth of the students earn one-third of their expenses.

Homes for Women Students.—Desirable room and board for the young women who attend the college, are secured from among the best homes in Fort Collins. They are all under the supervision and regulation of Professor Virginia Corbett, who is the adviser of college women on all matters pertaining to their home life. Only women students are received in these homes reserved for the college girls, and reasonable regulations which will insure proper home environment for students are insisted upon.

Boarding Clubs.—A number of boarding clubs for men have been organized and are managed by the students. In these clubs, board may be obtained for from $12.00 to $14.00 a month. Well furnished rooms, lighted, heated, and cared for, may be had at $1.25 per week.

The San Juan Club.— The San Juan Club is an incorporated boarding club, for male college students. Membership is secured by application to the president or steward. On payment of $1.00, together with a reserve deposit of $5.00, board is obtained at the rate of $13.00 a month, payable in advance. The San Juan Club was organized in 1892, and was incorporated under the laws of Colorado in 1903. The club furnishes the best of food, ably prepared by an experienced white cook. Everything about the tables and kitchen is kept in clean and sanitary condition.

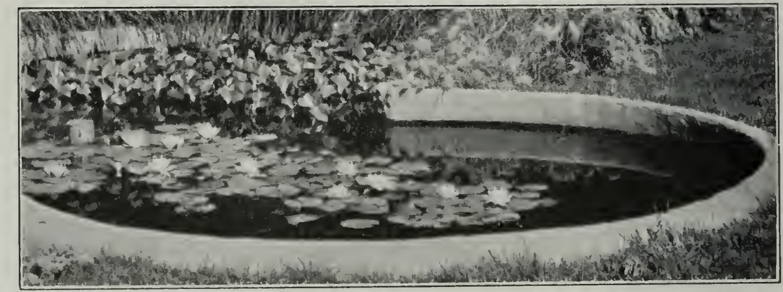
Private Board.—Students can secure lodging and board in excellent private families at from $20.00 to $25.00 per month. The college authorities are gratified to be able to announce that many of the best homes in Fort Collins are thus opened to students at reasonable rates. No one can estimate the influence of home life afforded the young student who is away from home for the first time.

To those who desire to board themselves, ample and reasonable opportunities are afforded.

College Day.—A day is set aside each year when all students of the college may take a "day off," and go for a good time into the country. In May, 1912, a special train was chartered and the whole college family was taken up into the mountains for an all-day picnic. For the year 1913-14, College Day will be celebrated on May 15. The students and faculty, alike, look forward to this time with great expectation.

Student Labor.—The college is an employer of student labor to a limited extent. In the year just closed our students received $3,000 in payment for work done on the college grounds. It is the policy of those in charge of the different forms of college work, to favor students whenever labor service is needed. The best qualified and most willing have the preference, if more service is offered than required.

Conduct.—"The college authorities assume that the students are manly men and womanly women and that they come here earnestly desirous of preparing themselves for useful and honorable careers in life. The aim of the faculty is to lead students to cultivate habits of steady application, self-control, a high sense of honor, truthfulness, and an interest in maintaining the purity of the moral atmosphere of the institution. By common consent, students do not smoke on the campus. Those who are not disposed to support heartily a sentiment of this kind should not apply for admission."



The Lily Pond

Hazing.—Extracts from the Session Laws of Colorado, of 1907, page 337:

"It shall be unlawful for any person to engage in any of these (those) practices commonly called "hazing," or in any acts of torturing, tormenting, or in any way maltreating a fellow inmate, employee or student.

"Any person found guilty of the violation of the provisions of the first section of this act shall be deemed guilty of a misdemeanor and shall upon conviction be fined not less than five dollars nor more than fifty dollars.

"Any officer, teacher or student connected with any of the state institutions of this state who shall be found guilty of violating the provisions of this act shall, if a teacher or employee, be dismissed from the further service of such state institution, and, if a student, his conviction shall work expulsion from the state institution he may be attending, in perpetuum.

"Any complaint of the violation of the provisions of this act coming to the faculty, board of control, regents, trustees, or officers of any state institution of this state shall immediately be inquired into by them, and it shall be their duty to expel students who may be proven to have been engaged in "hazing," tormenting, torturing or maltreating their fellow student, notwithstanding no conviction may have been had before a Justice of the Peace for the same offense."

Resolutions of State Board of Agriculture.—"Resolved, That the State Board of Agriculture is in full sympathy with the state statute on hazing, and that in the conduct of the affairs of the State Agricultural College and other institutions under its control, this law shall be rigidly enforced."

Stock Judging Pavilion

Division of Agriculture

The instruction in Agriculture is designed to meet the needs of two classes of students, those who desire to take up some kind of farming as a business, and those who desire to become agricultural experts, teachers or investigators.

Agricultural Hall, Entomological Building, Farm Mechanics Laboratory and Machine House, Horticultural Hall, and the Live Stock Pavilion provide splendid classroom and laboratory facilities.

The college herds and the Government Horse Breeding Plant provide unusual opportunity for live stock study. The college farm and the Colorado Experiment Station provide facilities for special study along Agronomic, Entomological, and Horticultural lines.

Of special importance to all classes of students in agriculture is the insect collection in the museum, which numbers 75,000 specimens, affording unusual opportunity for the study of the pests which prey with such disastrous results on the farm, orchard, and garden.

Agriculture in Colorado as well as in all the arid states rests on irrigation. Hence, in this region it becomes a highly specialized science. In addition to the knowledge required of the average farmer in the humid states, the farmer, orchardist or gardener, in the arid West, must understand the use of water for the production of crops—when to apply it, its use on different soils, the amount required in the varying soils,—altitudes and climatic conditions of different seasons.

Furthermore, there are the proper preparations of the fields for the successful application of water, the proper construction of ditches and laterals for its most economical and intelligent distribution. In brief, agriculture by irrigation is in itself a science which must be mastered in order to assure the most profitable results. Instruction is given to include these special conditions. No other institution is so advantageously situated for giving instruction in arid, high altitude and irrigated agriculture.

In addition to the college equipment, there is the highly cultivated region by which it is surrounded—a region where irrigation has been most successfully developed and most profitably practiced, and where all forms of agriculture abound. Thus to the theoretical and practical instruction given in the college are added the opportunities for observations and actual experience provided by the productive and prosperous conditions of agriculture that surround the institution.

Opportunities.—The population of the country is beginning to press upon its productive capacity. Land values have risen enormously, necessitating higher and higher production in order to pay interest on the increased valuation and return a profit. To meet these increased requirements, the farmer must be better trained, more intelligent than ever before, or be reduced to a hopeless "drudge." In addition to the opportunities offered for trained men, as farm owners or operators, there are constant requests for properly fitted men as farm managers, consulting experts, teachers and investigators. The college has been unable to fill the numerous requests which it has received for such trained men.

To meet the varied and special agricultural conditions of the state, election is offered in five courses, Agronomy, Animal Husbandry, Entomology, Forestry and Horticulture. The first two years of these courses are identical. Specialization in the respective courses begins in the junior year.

DIVISION OF AGRICULTURE

COURSE OF STUDY FOR FIRST TWO YEARS

The number before a subject refers to its description, the number after it refers to credits

FRESHMAN YEAR

First Semester

51.	Stock Judging	2
553 or 556.	Shop (Bench or Forge)	3
101.	Botany	5
502.	Algebra	3
503.	Trigonometry	2
262.	English	3
268.	Literature	2
	Drill	1

Second Semester

12.	Rural Architecture	3
556 or 553.	Shop (Forge or Bench)	3
201.	Surveying	3
202.	Field Work	2
102.	Economic Botany	2
301.	Physiology	3
263.	English	3
269.	Literature	2
	Drill	1

SOPHOMORE YEAR

First Semester

1.	Crop Production	3
605.	Physics	3
606.	Physics Laboratory	2
302.	Zoology	3
159.	Chemistry	3
264.	Argumentation	3
309.	Zoology Laboratory	3
	Drill	1

Second Semester

2.	Soils	3
401.	Plant Propagation	2
52.	Stock Judging	2
607.	Physics	3
608.	Physics Laboratory	2
160.	Chemistry	3
161.	Chemistry Laboratory	3
265.	Argumentation	2
	Drill	1

THE COURSE IN AGRONOMY

The most pronounced industrial development taking place in Colorado today is in agriculture. This development calls for a knowledge of the principles underlying the management of lands, the maintenance of the productive capacity of soils, and the relation of cropping systems to a permanent, profitable production.

The course in Agronomy is intended to fit young men to meet the problems presented in so far as they relate to the growth of crops and management of lands.

The great diversity of soils, altitude, and climate gives rise to a variety of crops and crop growing conditions rarely equaled. Thus, there is afforded an opportunity for studying crop production and improvement, soil and farm management under irrigated and dry farming conditions, from a moderate altitude to one so high that vegetation ceases to grow.

The modern farm requires the use of a large amount of complicated machinery. Mechanical power of one kind or another is rapidly replacing hand labor upon many farms. Many of the problems of farm labor are being solved by the adaptation of machines and motors to the work of the farm.

To meet this demand, instruction is given in Farm Machinery, Farm Motors, Rural Architecture, and Farm Equipment. Through these courses, the student becomes acquainted with the latest farm machinery, farm implements, and various types of power adapted to farm use. In the study of Rural Architecture, he becomes acquainted with the buildings of the farm, the material available for building purposes, rural sanitation and the essential points to be considered in the use of the material available for the construction of the buildings and equipment of the rural home.

Manufacturers and dealers in farm machinery, farm engines, and equipment, are rather liberal in the loan and donation of up-to-date machines, engines, and equipment for instructional purposes. The department now has on hand, upward of $15,000 worth of such implements.

The demand for young men properly trained along these lines is greater than the supply both in practical and scientific work.

While students taking work in this department may choose their electives from any of the subjects for which they are qualified, the following subjects are recommended as desirable electives: 53 Feeds and Feeding, 70 Animal Nutrition, 106 Systematic Botany, 10 and 11 Soil Fertility, 9 Agronomy Seminar, Entomology, and 55 Breeds of Live Stock.

COURSE OF STUDY IN AGRONOMY

For freshman and sophomore years of course, see page 31.

The number before a subject refers to its description, the number after it refers to credits.

JUNIOR YEAR

	First Semester			Second Semester	
13.	Farm Machinery	3	4.	Soils Laboratory	2
3.	Crops Laboratory	3	211.	Irrigation Engineering	3
162.	Organic Chemistry	3	164.	Organic Chemistry	3
163.	Organic Laboratory	2	165.	Organic Laboratory	2
103.	Plant Histology	2	104.	Plant Physiology	3
167.	Geology	2	14.	Farm Motors	3
	Electives	3		Electives	3
	Drill	1		Drill	1

SENIOR YEAR

	First Semester			Second Semester	
6.	Advanced Farm Crops	3	7.	Farm Management	3
107.	Economic Fungi	3	8.	Plant Breeding	3
304.	Embryology	1	253.	Irrigation Law	2
251.	Economics	2	679.	Bacteriology	2
	Electives	8		Electives	8
311.	Evolution and Heredity	1			

Agricultural Hall

THE COURSE IN ANIMAL HUSBANDRY

Live stock production and allied industries require a considerable degree of expert knowledge. The Animal Husbandry course aims to give a broad education in general agriculture and to train for the work of a live stock specialist.

The equipment in live stock at the college ranks with that of the best institutions in the middle west; and the freedom of elective allowed in the course permits a student to train for any special line of work open to live stock experts.

The graduate from this course has several lines of work open to him, among which are the management of live stock farms and ranches; agricultural journalism; teaching in agricultural colleges and high schools; investigational work in experiment stations; positions as salesmen for live stock houses and for live stock supply manufacturers; scientific assistants in the Department of Agriculture; and above all he is fitted to intelligently breed live stock upon his own farm, if he be so fortunate as to possess one.

The demand for strong men in these lines of work is insistent. The college has placed all its trained live stock men without difficulty and the demand is increasing.

Although the student is given free choice in the matter of electives, the following are suggested as being particularly suited to this course:—Junior year, first semester, 3 Crops Laboratory, 703 Diseases of Live Stock; second semester, 64 Swine Husbandry, 65 Pedigree Work, 76 Dairy Inspection, 688 Shoeing and Balancing, 4 Soils Laboratory, 5 Forage Crops; senior year, first semester, 63 Sheep Raising, 74 Animal Husbandry Seminar, 73 Experimental Methods, 6 Advanced Farm Crops, 57 Meats, 58 Milk Production, 303 Entomology; second semester, 68 Live Stock Practicums, 70 Animal Nutrition, 71 Poultry Husbandry

A Shaded Path on the Campus

72 Creamery Work, 75 Seminar, 15 Rural Architecture, 166 Agricultural Chemistry, 10 Soil Fertility, 11 Soil Fertility Laboratory.

COURSE OF STUDY IN ANIMAL HUSBANDRY

For freshman and sophomore years of course, see page 31.

The number before a subject refers to its description, the number after it refers to credits.

JUNIOR YEAR

First Semester

54.	Judging Breed Types of Sheep and Swine	2
13.	Farm Machinery	3
55.	Breeds of Farm Animals	3
53.	Feeds and Feeding	3
162.	Organic Chemistry	3
163.	Organic Laboratory	2
	Electives	3
	Drill	1

Second Semester

14.	Farm Motors	3
56.	Beef Production	1
66.	Dairy Manufactures	3
211.	Irrigation Engineering	3
164.	Organic Chemistry	3
165.	Organic and Agricultural Analysis	2
	Electives	4
	Drill	1

SENIOR YEAR

First Semester

59.	Marketing Live Stock	2
60.	The Horse	2
304.	Embryology	1
251.	Economics	2
704.	Veterinary Elements	2
	Electives	6

Second Semester

61.	Animal Breeding	3
62.	Judging Breed Types of Horses and Cattle	1½
679.	Bacteriology	2
253.	Irrigation Law	2
7.	Farm Management	3
	Electives	6
	Students must elect—	
675.	Bacteriology Laboratory	2½

On the College Farm

THE COURSE IN ENTOMOLOGY

The aim of the course in Entomology is to prepare men for positions in the Government Bureau of Entomology and in the various agricultural colleges and experiment stations of the country, and for similar positions in foreign countries. The course also specially prepares young men to act as county horticultural inspectors, and it is a great help to those who wish to become managers of orchards and ranches.

A number of such positions are already being held by our graduates that have specialized in entomology, and the demand for well qualified young men in this line of work much exceeds the supply. The better positions call for men with a broad scholarship as a basis for their work.

Some Latin, and a good reading knowledge of German and French are a great help to any one pursuing this course.

During the junior year the required work of this course runs parallel with the course in Horticulture.

While the students are given full choice of the matter of electives. the following are recommended from among those offered:—Junior year, first semester, 103 Plant Histology, 3 Crops Laboratory, 108 Elements of Forestry; second semester, 4 Soils Laboratory, 61 Animal Breeding; senior year, first semester, Modern Language, 251 Economics, 210 Photography, 405 Pomology, 406 Pomology Laboratory, 701 Veterinary Elements; second semester, Modern Language, 8 Plant Breeding, 7 Farm Management, 166 Agricultural Chemistry.

COURSE OF STUDY IN ENTOMOLOGY

For freshman and sophomore years of course, see page 31.

The number before a subject refers to its description, the number after it refers to credits.

JUNIOR YEAR

First Semester

162.	Organic Chemistry	3
163.	Organic Laboratory	2
13.	Farm Machinery	3
167.	Geology	2
303.	Entomology	5
	Electives	4
	Drill	1

Second Semester

164.	Organic Chemistry	3
165.	Organic Laboratory	2
104.	Plant Physiology	3
8.	Plant Breeding	3
14.	Farm Motors	3
	Electives	4
	Drill	1

SENIOR YEAR

First Semester

306.	Entomology	5
304.	Embryology	1
107.	Economic Fungi	3
	Electives	9

Second Semester

307.	Entomology	5
679.	Bacteriology	2
253.	Irrigation Law	2
305.	Forest Insects	1
	Electives	8

THE COURSE IN FORESTRY

The course in Forestry is primarily a technical course, and aims to teach the underlying principles of the subject together with enough practical work to show the application of these principles.

It is a four year course. The technical work in Forestry begins with the first semester of the junior year and takes the larger part of the time during the remainder of the course.

During the last two years of the course, field work occupies considerable portions of the time devoted to forestry.

Although forestry as a profession is comparatively new in this country, still the demand for men of technical training in the subject is in excess of the supply.

While the students are permitted to make their own choice of electives, the following list is suggested as offering studies especially suitable for the course:—Junior year, first semester, 103 Plant Histology, 210 Photography; second semester, 305 Forest Insects, 257 Industrial History, 4 Soils Laboratory; senior year, first semester, 251 Economics, 266 Practical English, 116 Forestry Seminar, 55 Breeds of Farm Animals, 105 Experimental Plant Physiology, 119 Timber Preservation; second semester, 106 Systematic Botany, 117 Forestry Policy, 214 Meteorology, 8 Plant Breeding, 120 Ecology of Plants.

COURSE OF STUDY IN FORESTRY

For freshman and sophomore years of course, see page 31.

The number before a subject refers to its description, the number after it refers to credits.

JUNIOR YEAR

First Semester

108.	Elements of Forestry	2
109.	Dendrology	3
162.	Organic Chemistry	3
163.	Organic Chemistry	2
303.	Entomology	5
	Electives	3
	Drill	1

Second Semester

164.	Organic Chemistry	3
165.	Organic and Agricultural Analysis	2
104.	Plant Physiology	3
110.	Dendrology	3
111.	Silviculture	3
	Electives	4
	Drill	1

SENIOR YEAR

First Semester

107.	Economic Fungi	3
114.	Forest Mensuration	3
167.	Geology	2
	Electives	9

Second Semester

117.	Forestry Policy	2
112.	Wood Technology	1
113.	Wood Technology Laboratory	2
8.	Plant Breeding	3
118.	Forest Management	3
	Electives	9

COURSE IN HORTICULTURE

The horticulture of the Rocky Mountain states, is, to a great extent, in a class by itself. The dry atmosphere, high altitude, and the artificial use of water make many of the practices, if not the principles, of horticulture here different from those of the humid sections. The many natural advantages for a high development of horticulture in these sections have brought this industry rapidly to the front. Colorado fruit is already noted, in all the high class markets, for its rich color, perfect form, and fine quality, as well as for the amount of the product.

Other horticultural crops are rapidly coming into prominence. Among these, the potato industry is already an established factor in Colorado wealth. Cabbage, celery, and melon growing are coming to the front, and the possibilities for development in the line of vegetable and strawberry growing in the high mountain valleys are attracting much attention.

These intensive industries bring many problems that are beyond solution by the ordinary grower. For this reason the demand for men who know not only how to grow these plants, but also know the underlying principles of plant growth, their diseases and remedies, is becoming greater year by year.

Scientific Horticulture Applied to the Orchard

The course in horticulture is designed to train men to meet this demand. With this end in view the course has been arranged to give the student a maximum of foundation sciences that he may be equipped to solve the problems that will confront him in the field.

Sufficient time is not available during the course to give the student as much experience in the field as is desired. It is therefore recommended that those students who have had but little experience in horticultural work shall spend one summer vacation or its equivalent in the field.

While the student is given full choice in the matter of electives, it is recommended that the following be taken:—First semester, junior year, 109 Dendrology; second semester, 253 Irrigation Law; first semester, senior year, 306 Advanced Entomology, 105 Experimental Plant Physiology; second semester, senior year, 408 Floriculture, 410 Landscape Gardening, 307 Advanced Entomology, 106 Systematic Botany, 120 Ecology of Plants.

COURSE OF STUDY IN HORTICULTURE

For freshman and sophomore years of course, see page 31.

The number before a subject refers to its description, the number after it refers to credits.

JUNIOR YEAR

First Semester			Second Semester		
103.	Plant Histology	2	164.	Organic Chemistry	3
162.	Organic Chemistry	3	165.	Organic Laboratory	2
163.	Organic Laboratory	2	211.	Irrigation Engineering	3
303.	Entomology	5	104.	Plant Physiology	3
167.	Geology	2	403.	Vegetable Gardening	3
	Electives	4		Electives	4
	Drill	1		Drill	1

SENIOR YEAR

First Semester			Second Semester		
405.	Pomology	3	412.	Pomology Seminar	2
406.	Pomology Laboratory	1	7.	Farm Management	3
107.	Economic Fungi	3	410.	Landscape Gardening	2
408.	Floriculture	2	8.	Plant Breeding	3
304.	Embryology	1	679.	Bacteriology	2
409.	Floriculture Laboratory	1		Electives	6
	Electives	7	411.	Landscape Gardening Laboratory	1

Division of General Science and Home Economics

Two general lines of work are open to women: one offering, in addition to elementary training in Home Economics, the advantages of advanced study in mathematics, science, language, literature, economics and modern languages; the other giving opportunity for the detailed study of technical subjects in Home Economics, necessary to women who intend to follow some line of household activity as a vocation. The requirements in the first two years are the same for both courses and embrace basic work in mathematics, science, and language. Specialization begins in the junior year with a liberal choice of electives in the junior and senior years. Of the electives allowed, five credits may be chosen in the Conservatory of Music.

The problems of the home are fundamental to national health, wealth, and character. In recognition of this truth, there is given to every girl the opportunity to receive training that shall enable her to more intelligently administer the affairs of the house. Aside from its utilitarian value, such training affords a means of liberal culture and brings emphasis to the importance of the home as a social unit.

Science Applied in the Laundry

The introduction of agriculture into the rural schools, and into the high schools, opens up a new field for science teachers. The demand for efficient teachers of Home Economics is greater than the supply, and graduates in this line of work are sought after as dietitians, lecturers in college extension work, managers of tea rooms, and demonstrators for college or club work.

GENERAL SCIENCE AND HOME ECONOMICS

COURSE OF STUDY FOR FIRST TWO YEARS

The number before a subject refers to its description, the number after it refers to credits.

FRESHMAN YEAR

First Semester

262.	English	3
268.	Literature	2
502-3.	Mathematics, or 101-A Botany*	5
375.	Sewing I**	3
351.	House Management and Sanitation	4
601.	Household Physics	2
602.	Household Physics Laboratory	1
	Gymnasium	1

Second Semester

263.	English	3
269.	Literature	2
504-5.	Mathematics, or 301-353 Physiology and Personal Hygiene*	5
352.	Domestic Architecture and House Furnishing	5
603.	Household Physics	2
604.	Household Physics Laboratory	1
360.	Foods I **	2
	Gymnasium	1

SOPHOMORE YEAR

First Semester

506.	Mathematics	5
	or	
302.	Zoology	6
159.	Chemistry	3
264.	English	3
451-5.	Modern Languages	5
361.	Foods II **	3
	Gymnasium	1

Second Semester

260.	English History	3
265.	English	2
160.	Chemistry	3
161.	Chemistry Laboratory	3
452-6.	Modern Languages	5
362.	Foods III **	2
376.	Sewing II **	2
	Gymnasium	1

*Students electing Home Economics are advised to select courses in botany, physiology, and personal hygiene.

**Required of Home Economics students not presenting Domestic Science upon entering.

COURSE IN GENERAL SCIENCE

The course in General Science offers unusual opportunities to young women who seek, in addition to the fundamentals of Home Economics, the advantages afforded by the well-equipped laboratories provided for the technical courses of the institution.

During the junior and senior years, advanced study in any science may be selected, and additional work in language, history, literature, economics, or other subjects may be chosen.

COURSE OF STUDY IN GENERAL SCIENCE

For freshman and sophomore years of course, see page 41.

The number before a subject refers to its description, the number after it refers to credits.

JUNIOR YEAR

First Semester

252.	Sociology	5
453-7.	Foreign Language	5
	Electives	4
258.	Advanced History	2
257.	Industrial History	3
	Gymnasium	1

Second Semester

275.	Psychology	5
454-8.	Foreign Language	5
259.	Advanced History	2
271.	American Literature	2
	Electives	4
	Gymnasium	1

SENIOR YEAR

First Semester

272.	Literature	3
251.	Economics	2
	Thesis	2
266.	Practical English	1
210.	Photography	1
	Electives	10

Second Semester

273.	Literature	5
	Thesis	2
410.	Landscape Gardening	2
	Electives	10

HOME ECONOMICS

The Department of Home Economics offers courses of instruction touching upon all phases of home life. The uniform requirement for all students in the first two years gives a general survey of the home training work. Opportunity is given for election along Domestic Science or Domestic Art lines in the junior and senior years. This enables the student to do more intensive work in the direction of her special interest. Each course leads to the degree of Bachelor of Science.

COURSES OF STUDY IN HOME ECONOMICS

For freshman and sophomore years of course, see page 41.

The number before a subject refers to its description, the number after it refers to credits.

JUNIOR YEAR

First Semester				Second Semester			
Domestic Science		**Domestic Art**		**Domestic Science**		**Domestic Art**	
252.	Sociology 5	252.	Sociology 5	275.	Psychology 5	275.	Psychology 5
162-3.	Organic Chemistry 5	162-3.	Organic Chemistry 5	164-5.	Organic Chemistry 5	164-5.	Organic Chemistry 5
363.	Foods IV.......4	377.	Textiles I.......2	390.	Demonstrations.2	390.	Demonstrations.2
	Electives 5	379.	Design and Drafting......3		Electives 5	378.	Textiles II......2
	Gymnasium 1		Electives 5		Gymnasium 1	380.	Dressmaking I..2
			Gymnasium 1				Electives 4
							Gymnasium 1

SENIOR YEAR

272.	English Literature..........3	272.	English Literature..........3	273.	English Literature..........5	273.	English Literature..........5
258.	History 2	258.	History 2	259.	History 2	259.	History 2
391.	Teachers' Course.......3	391.	Teachers' Course.......3	679	or 675. Bacteriology.........5	382.	Art Needlework.2
354.	Home Nursing..2	354.	Home Nursing..2	365.	Serving of Meals........3	381.	Dressmaking II.3
364.	Dietaries 2	383.	Millinery 2		Electives 7		Electives 6
	Electives 5		Electives 5				

Supplementary to the courses regularly offered in the department are courses in physics, chemistry, botany, and bacteriology, in which household applications of the subjects named are especially emphasized. Elective subjects of especial interest are the courses offered in Music, 408 Floriculture, 410 Landscape Gardening, 308 Ornithology, 553 Bench Work in Wood, 66 Dairy Manufactures, 274 History of Education, and 276 School Management. The group of Home Economics electives includes 392 Household Economy, 393 Special Problems, 384 Tailoring, and 391 Practice Teaching. While it is open for the student to take any line of electives she desires, yet it is recommended that some be chosen in the direction of the plan for future activity.

Division of Mechanic Arts

In Mechanic Arts, the college offers standard four year courses in Civil and Irrigation Engineering, in Electrical Engineering, and in Mechanical Engineering.

The studies for the first two years are the same for all engineering courses. Specialization begins with the junior year, and in the junior and senior years considerable freedom in the choice of studies is allowed. A strong faculty, splendid buildings, excellent equipment, and library facilities combine to make the engineering courses especially thorough. The regular college work is supplemented with a great deal of practical outside experience. The summer field camp for Civil and

Forty-four Students at the Forge at Once

Irrigation engineers, and inspection trips for the senior Electrical and Mechanical engineers, give a good knowledge of the practical needs of the profession.

Students in the Division of Mechanic Arts do most of the engineering work around the college. All of the electric wiring, installation of motors and transformers, electrical and much of the mechanical repair work, the designing and building of experimental apparatus is done by the students of this division.

The great natural resources of Colorado have been developed only sufficiently to show the possibilities of industrial development. This industrial development calls for an increasing number of well trained men. The building of railroads and trolley lines, of dams, canals and reservoirs, of hydro-electric plants and transmission lines, of factories and reduction plants, all offer opportunities for the young engineer; while the operation of these industrial enterprises opens up ever increasing opportunities for the technical graduate.

MECHANIC ARTS

COURSE OF STUDY FOR FIRST TWO YEARS

The number before a subject refers to its description, the number after it refers to credits.

FRESHMAN YEAR

First Semester			Second Semester		
262.	English	3	263.	English	3
268.	Literature	2	269.	Literature	2
502.	College Algebra	3	505.	Trigonometry	1
503.	Trigonometry	2	504.	Analytic Geometry	4
551.	Carpentry and Joinery	1	555.	Mechanical Drawing	2
552.	Mechanical Drawing	4	201.	Surveying	3
553 or 556.	Shop (Bench or Forge)	3	556 or 553.	Shop (Forge or Bench)	3
554.	Shop (Lathe)	2	202.	Field Work	2
	Drill	1		Drill	1

SOPHOMORE YEAR

First Semester			Second Semester		
506.	Differential Calculus	5	507.	Integral Calculus	5
605.	Physics	3	607.	Physics	3
606.	Physics Laboratory	2	608.	Physics Laboratory	2
151.	Chemistry	3	557.	Descriptive Geometry	5
256.	U. S. Constitution	3	631.	Applied Mechanics	3
251.	Economics	2	152.	Chemical Laboratory	2
	Drill	1		Drill	1

(Civil and Irrigation Engineering sophomores take 207 Field Camp No. 1)

COURSES IN CIVIL AND IRRIGATION ENGINEERING

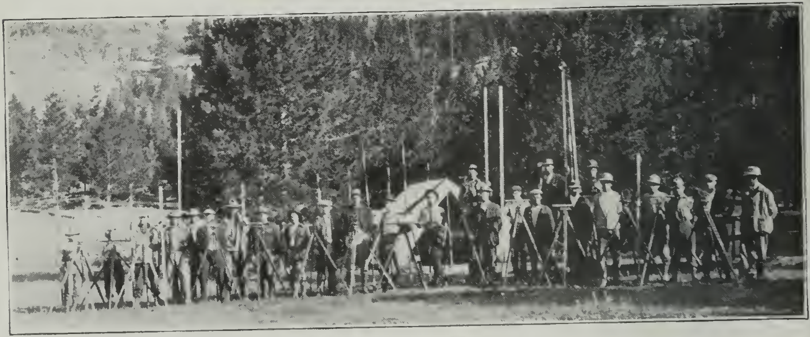
Successful agriculture in Colorado is based upon the science of irrigation, and existing conditions in this state call for knowledge along these lines.

As training in this line is closely associated with the other purposes of the land grant colleges, Civil and Irrigation Engineering has occupied a prominent place in the college for twenty years. It was the first course of the kind given in any American college. That the training has proved useful is shown by the records of the young men who have taken it and have attained prominent positions in the development of this and adjoining states and responsible positions in the Government Reclamation service.

The intention of the course is to give a broad and thorough foundation for engineering in general, but especially for irrigation engineering, and therefore special attention is given to subjects relating to irrigation, hydraulics, and their applications. It is intended not only to give a student the proper theoretical foundation, but to give skill in handling instruments, so that a student will be self-reliant and capable of accurately handling instrumental problems. This also includes instruction in measurement of streams, rating of ditches, etc.

The branch of highway construction has been taught in this department for years and that, together with the surveying, strength of materials, concrete, bridges, etc., places the graduates of this department where experience is only necessary to make them expert road engineers.

Considerable attention is given to practical problems that will cultivate the judgment and self-reliance, and will train the student to meet exigencies as they arise.



Civil and Irrigation Engineers' Summer Field Camp

The splendid new Civil and Irrigation Engineering building, just constructed and equipped, makes it possible for this institution to offer students in this department advantages for instruction possessed by no other college in the United States.

While the student is given full choice in the matter of electives, it is recommended that the electives be taken from the following:—Junior year, first semester, 210 Photography, 1 Crops, 220 Testing Laboratory; second semester, 227 Seminar, 2 Soils; senior year, first semester, 209 Draughting, 216 Water Supply, 228 Seminar, 231 Irrigation Laboratory, 3 Crops Laboratory; second semester, 222 Concrete, 229 Seminar, 233 Graphic Statics, 214 Meterology, 217 Drainage, 4 Soils, 215 Canal Management, 225 Highway Construction.

COURSE OF STUDY IN CIVIL AND IRRIGATION ENGINEERING

For freshman and sophomore years of course, see page 45.

The number before a subject refers to its description, the number after it refers to credits.

JUNIOR YEAR

First Semester

207.	Field Camp No. 2	1
203.	Surveying	3
219.	Strength of Materials	5
208.	Drafting	3
204.	Field Work	3
	Electives	4
	Drill	1

Second Semester

212.	Hydraulics	5
205.	Canal Surveying	2
206.	Field Work	2
211.	Irrigation Engineering	3
213.	Hydraulic Laboratory	2
	Electives	4
	Drill	1

SENIOR YEAR

First Semester

207.	Field Camp No. 3	1
224-254.	Contracts and Specifications	1
221.	Trusses and Bridges	4
609.	D. and A. Current Machinery	3
223.	Engineering Design	3
	Electives	8

Second Semester

230.	Thesis	2
253.	Irrigation Law	2
218.	Dams	2
232.	Irrigation Laboratory	3
	Electives	10

The Shoshone Dam (Work of an Alumnus)

THE COURSE IN ELECTRICAL ENGINEERING

The object of the course in Electrical Engineering is to train young men for service in the electrical engineering profession. The course as now taught follows the same general outline as the electrical engineering courses of the larger technical colleges. The department is well prepared both in instructional force and laboratory equipment to give such a course.

We believe that a student learns best by doing. The student is therefore given an opportunity to get experience here which he usually does not get until after he leaves college. All the electrical work about the college is done by students of this department.

While it is open for the student to make his own choice of electives, it is recommended that subjects from the following list of electives be taken:—Junior year, first semester, 220 Testing Laboratory, 558 Steam Boilers; second semester, 615 Electric Lighting and Photometry; senior year, first semester, 616 Telephones and Telegraph, 617 Telephones and Telegraph Laboratory, 567 Steam Engines, 623 Electrical Design, 625 Seminar; second semester, 628 Commercial Electrical Engineering, 629 Thesis, 627 Hydro-Electric Machinery, 630 Thesis, 622 Street Railways.

COURSE OF STUDY IN ELECTRICAL ENGINEERING

For freshman and sophomore years of course, see page 45.

The number before a subject refers to its description, the number after it refers to credits.

JUNIOR YEAR

First Semester

219.	Strength of Materials	5
611.	Electrical Measurements	3
612.	Electrical Laboratory	2
613.	Direct Current	2
	Electives	7
	Drill	1

Second Semester

212.	Hydraulics	5
614.	Direct Current Laboratory	5
613A.	Direct Currents	3
	Electives	6
	Drill	1

SENIOR YEAR

First Semester

618.	Alternating Currents	5
619.	Alternating Current Laboratory	5
	Electives	9

Second Semester

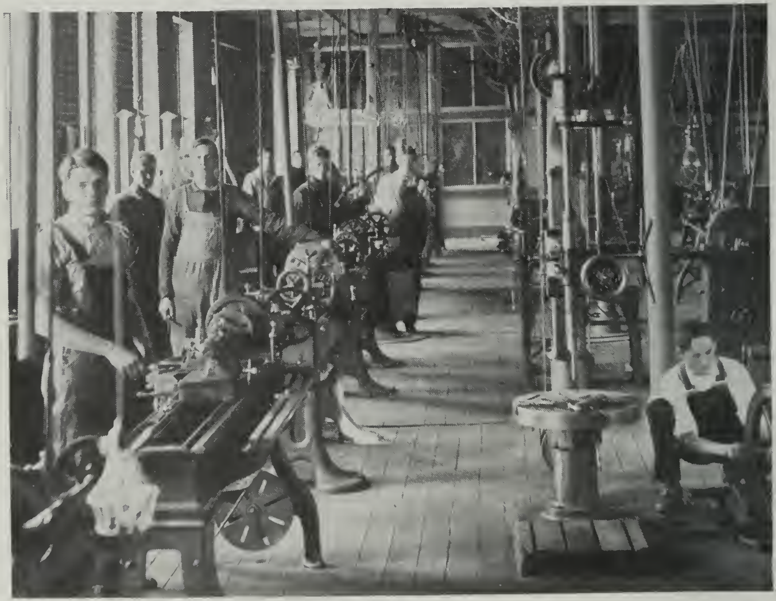
620.	Alternating Currents	2
621.	Electrical Laboratory	5
632.	Electrical Power Transmission	2
626.	Seminar	1
	Electives	9

THE COURSE IN MECHANICAL ENGINEERING

Mechanical Engineering relates to the construction and use of machinery, such as steam engines, machine tools, etc.

The course as presented at the Colorado Agricultural College is such as is given at the best technical schools of the United States. The instruction is intended to be thorough and the equipment is of the very best, care being taken when obtaining apparatus that each piece shall be of the greatest usefulness for its purpose. Colorado is forging ahead magnificently along industrial lines, and with the development of the vast natural resources within her borders, new industrial enterprises are springing up everywhere, while the older ones are becoming more firmly established. With this industrial demand comes a demand for men competent to solve the problems connected with such enterprises. Young men from this college are in many of these establishments, occupying positions of trust and responsibility.

This course prepares students for the profession of mechanical engineering. It teaches the general principles of engineering and



In the Machine Room

unites theoretical work and practical research. Instruction is imparted by means of text-books, lectures, illustrations, and experiments in testing materials, machines, and motors.

While it is open for the student to take any line of elective studies he desires, yet it is recommended that they be taken from the following list:—Junior year, first semester, 559 Principles of Mechanism, 560 Gas and Oil Engines, 219 Strength of Materials; second semester, 564 Machine Tools, 565 Machine Design; senior year, first semester, 570 Machine Design, 571 Specifications and Contracts, 575 Machine Shop; second semester, 577 Railway Mechanical Engineering, 579 Steam Engine Design, 580 Compressed Air Machinery, 583 Refrigeration and Refrigerating Machinery, 584 Hydraulic Machinery.

COURSE OF STUDY IN MECHANICAL ENGINEERING

For freshman and sophomore years of course, see page 45.

The number before a subject refers to its description, the number after it refers to credits.

JUNIOR YEAR

First Semester

219.	Strength of Materials	5
558.	Steam Boilers	3
561.	Kinematics Drawing	1
562.	Shop (Foundry)	2
563.	Pattern Making	1
	Electives	6
	Drill	1

Second Semester

212.	Hydraulics	5
566.	Shop (Machine)	5
568.	Thermo-Dynamics	3
569.	Transmission of Power	1
	Electives	4
	Drill	1

SENIOR YEAR

First Semester

567.	Steam Engines and Steam Turbines	3
572.	Seminar	1
574.	Shop (Machine)	3
609.	D. and A. Current Machinery	3
610.	D. and A. Current Machinery Laboratory	2
	Electives	9

Second Semester

573.	Metallurgy	1
576.	Engineering Design	1
578.	Heating and Ventilation	2
581.	Seminar	1
582.	Thesis	2
585.	Mechanical Engineering Laboratory	3
	Electives	9

Division of Veterinary Medicine

Beginning with the College year 1913-14 the Division of Veterinary Medicine will offer a four-year course of nine months each year.

It is considered that this course, based on a fifteen unit requirement for matriculation, is in accord with the highest standards in Veterinary education. The added work in Animal Husbandry lines should meet the demands for veterinarians with scientific knowledge of the principles of breeding, dairying, proper rations, adaptation of types to market demands and individual excellence.

Opportunities for Qualified Veterinarians.—Veterinary Medicine, in its several fields of activity, affords unusual opportunities for young men of character and professional training:

A.—Private Practice—There are many lucrative fields for practice awaiting those veterinarians who are qualified to render an appreciative service.

B.—The United States Army—Veterinarians in the Army service have positions similar to those of commissioned officers. The salary begins with $1,500 per year and there is 10 per cent. increase for each five years service up to twenty years. The position carries the same allowance as second lieutenant of cavalry.

C.—The United States Department of Agriculture—In this connection many veterinarians are employed in the Bureau of Animal Industry, as executives, investigators of animal diseases, veterinary inspectors, livestock agents, and quarantine officers. Salaries range from $1,400 to $2,500 per year.

D.—Agricultural Colleges and Experiment Stations—Veterinarians are employed in Agricultural and Veterinary Colleges as instructors, and in Experiment Stations as investigators of animal diseases, at salaries ranging from $1,500 to $3,500.

E.—Municipal Food Inspectors—Many veterinarians in addition to private practice are employed as City Veterinarians and Food Inspectors. The veterinarian is the only one qualified by training to supervise all departments of food inspection and his manifold duties, with due diligence, insure a satisfactory compensation.

F.—State Veterinarians—Here the salaries range from $1,500 to $3,000.

G.—Animal Husbandry—Qualified veterinarians command good fees as counselors to breeders and importers, and in many ways as guardians of the vast animal wealth of the state or nation.

FOUR YEAR COURSE OF STUDY

The number before a subject refers to its description, the number after it refers to credits.

FRESHMAN YEAR

First Semester

101.	Botany	5
302.	Zoology	3
153.	Medical Chemistry	3
690.	Clinic	1
650.	Anatomy Laboratory	5
309.	Zoology Laboratory	3
	Drill	1
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Second Semester

660.	Physiology	4
459.	Word Analysis	2
155.	Medical Chemistry	3
680.	Dentistry	1
691.	Clinic	1
651.	Anatomy Laboratory	5
154.	Chemistry Laboratory	2
681.	Surgical Restraint	1
	Drill	1

SOPHOMORE YEAR

First Semester

661.	Physiology	2
655.	Histology	4
53.	Feeds and Feeding	3
55.	Breeds of Farm Animals	3
652.	Anatomy Laboratory	2½
156-57-58.	Chemistry Laboratory	2½
656.	Histology Laboratory	3
	Drill	1

Second Semester

662.	Physiology	2
664.	Materia Medica	4
670.	Parasitology	2
58.	Milk Production	1
692.	Clinic	2½
663.	Physiology Laboratory	1
653.	Anatomy Laboratory	5
665.	Pharmacy Laboratory	2
671.	Parasitology Laboratory	½
	Drill	1

JUNIOR YEAR

First Semester

697.	Theory and Practice	4
682.	Surgery	2
672.	Pathology	3
304.	Embryology	1
666.	Materia Medica	2
693.	Clinic	2½
654.	Surgical Anatomy Laboratory	2½
673.	Pathology Laboratory	3
311.	Evolution and Heredity	1
	Drill	1

Second Semester

698.	Theory and Practice	3
683.	Surgery	2
674.	Bacteriology	3
66.	Dairy Manufactures	2
684.	Lameness	3
694.	Clinic	2½
675.	Bacteriology Laboratory	2½
52.	Stock Judging	2
66.	Dairy Laboratory	1
	Drill	1

SENIOR YEAR

First Semester

699.	Theory and Practice	4
685.	Operative Surgery	2
686.	Obstetrics	4
668.	Therapeutics	2
676.	Meat Inspection	3
255.	Jurisprudence	½
667.	Toxicology	½
695.	Clinic	2½
687.	Surgical Exercises	1
677	Autopsy	½
54.	Stock Judging	2

Second Semester

700.	Theory and Practice	5
688.	Shoeing	1
689.	Soundness	1
701.	Control of Infectious Diseases	2
669.	Therapeutics	2
702.	Dairy Inspection	1
61.	Animal Breeding	3
696.	Clinic	2½
678.	Laboratory Diagnosis	2½

DEPARTMENTS

AGRONOMY

ALVIN KEYSER	Professor
D. W. FREAR	Associate Professor
J. D. MARSHALL	Instructor
JEROME B. FRISBEE	Instructor

The Department of Agronomy gives instruction in those subjects which relate to the production of field crops, to soils and to the management of land. The great diversity of Colorado soils, climate, and elevation gives a diversity of crops and crop culture rarely equaled. In meeting these diverse conditions, abundant opportunity is offered to study the many phases of crop production, plant breeding, soil physics, soil fertility, and farm management.

1.—Crop Production—A study of Colorado field crops; their seeding, culture, harvesting, and adaptability to different locations with respect to altitude, with and without irrigation. Three hours attendance, three credits, first semester, sophomore year. Mr. Frear

2.—Soils—Principles of the origin, physics, chemistry, and biology of soils; their relation to crop production. Three hours attendance, three credits, second semester, sophomore year. Text, "Soils," by Lyon and Fippin. Mr. Keyser and Mr. Marshall

3.—Crops Laboratory—Laboratory study of Colorado field crops. Identification and classification. Relation of parts and their economic uses. Seed storing, purity, and germination. Treatment of economic diseases. Grading and judging. Six hours attendance, three credits, first semester, junior year. Text, "Examining and Grading Grains." by Lyon and Montgomery. Mr. Frear

4.—Soils Laboratory—Physical and mechanical properties of soils, their relation to tillage, soil moisture, water application, and crop growth. Four hours attendance, two credits, second semester, junior year. Fee, $2.00. Mr. Marshall

5.—Forage Crops—A laboratory and classroom study of the native and cultivated pasture and meadow crops of Colorado. Their occurrence, culture, adaptability to different regions, feeding value, and uses. Prerequisite, 1. Students without prerequisite may enter only by consent of the head of the department. Four hours attendance, two credits, second semester. Elective. Mr. Frear

6.—Advanced Crops—A more detailed study than Agronomy 1, Crop Production, of selected field and forage crops. Their history, character and composition; culture methods, adaptability; marketing and uses. Three hours attendance, three credits, first semester, senior year. Text, "Cereals in America," by Hunt. Mr. Frear

7.—Farm Management—The farming business; relation and adjustment of the various activities, location of farm equipment, labor, accounting, and marketing. Types or systems of farming and their relation to a permanent agriculture. Irregular or special students may not elect Farm Management without the consent of the head of the department. Three hours attendance, three credits, second semester, senior year. Mr. Keyser and Mr. Frear

In the Agronomy Laboratory

8.—Plant Breeding—A study of the principles of plant improvement. Theories of heredity and variation. Improvement of plant crops by breeding. Work of modern plant breeders. Text, lectures, readings. Irregular and special students may not elect Plant Breeding without the consent of the head of the department. Three hours attendance, three credits, senior year, second semester.

Mr. Keyser and Mr. Frear

9.—Agronomy Seminar—Lectures, readings and consultations on assigned agronomic topics. Elective, first semester, senior year, one hour attendance, one credit, unless otherwise arranged.

Mr. Keyser and Mr. Frear

10.—Soil Fertility—The productive capacity of lands. The relation of manurage, farming methods, and systems to fertility and its maintenance. Elective, second semester, senior year. Three hours attendance, three credits. Mr. Keyser and Mr. Marshall

11.—Soil Fertility Laboratory—Laboratory work, illustrating principles of soil fertility. Field observations, lectures, and readings. Elective, second semester, senior year, four hours attendance, two credits. Mr. Keyser and Mr. Marshall

12.—Rural Architecture—The student will be required to make complete working drawings for selected or assigned rural buildings and equipment. In addition to the designing of buildings, a portion of the time will be devoted to the study of building materials available for the rural builder, including farm cement and concrete construction and such other building materials as are most readily available in the rural community. The minor equipment about the farm and minor building equipment for increasing the convenience of such structures will receive proper emphasis. Required, second semester, freshman year, six hours attendance, three credits. Mr. Frisbee

13.—Farm Machinery—A course of instruction in the machinery of the farm. The various machines, their uses and manufacture are studied, in relation to their various places of operation upon the farm. Tillage machinery, seeding machinery, harvesting machinery, pumping machinery, and general labor saving machinery adapted to the different processes of farm work are taken up and studied. Usually machines adapted for each of these purposes are available from a number of different manufacturers. Six hours attendance, three credits, first semester, junior year. Text, "Farm Machinery and Farm Motors," by Davidson and Chase. Fee, $1.00. Mr. Frisbee

14.—Farm Motors—A study of the motors and power machinery available for farm use. The plans of construction, the care and use of the various types of these motors are carefully studied, including the following motors: The horse, steam, gasoline, water, and electric engines. Methods of applying these various motors to use upon the farm are illustrated. Required, second semester, junior year, six hours attendance, three credits. Fee, $2.00. Mr. Frisbee

15.—Rural Architecture—A more advanced course in Rural Architecture than course 12. This course is recommended as elective for Agronomy, Animal Husbandry, and Horticultural students. Credit according to work done. Prerequisites, courses 12, 13, 14. May be elected by other than regular students only by the consent of the head of the department.
Mr. Frisbee

ANIMAL HUSBANDRY

G. E. MORTON	Professor
H. E. DVORACHEK	Assistant Professor
G. A. GILBERT	Instructor
W. E. VAPLON	Instructor

51.—Judging Market Types of Sheep and Swine—Training in the judging of mutton and fine-wooled sheep, and of lard and bacon hogs.

High class, show winning representatives of Southdown, Shropshire, Oxford Down, Hampshire, Ryeland, Lincoln, and Rambouillet sheep, and of Berkshire, Poland China, Duroc Jersey, and Tamworth swine are used for class work.

Required in the agricultural division, four hours attendance, two credits, freshman year, first semester. Text, Craig's "Judging Live Stock."
Mr. Gilbert

52.—Judging Market Types of Horses and Cattle—Score card and ring judging of horses and cattle. Aberdeen-Angus, Hereford, Galloway, Short Horn, Red Polled, Ayrshire, Jersey, and Holstein Friesian cattle, and American Saddle, American Trotter, and Percheron horses owned by the college, are used for judging work. The best collection of carriage horses available for instruction at any agricultural college is found in the breeding stud maintained jointly by the Colorado Agricultural College and the U. S. Department of Agriculture.

Required in the Agricultural Division, sophomore year, and in Veterinary Medicine, freshman year, four hours attendance, two credits, second semester.
Mr. Dvorachek

53.—Feeds and Feeding—Required in Animal Husbandry, junior year and Veterinary Medicine, sophomore year, three hours attendance, three credits, first semester. Prerequisites 159, 160 and 161. Not elective for irregular or special students except with the consent of the head of the department. Text, Henry's "Feeds and Feeding."
Mr. Dvorachek

54.—Judging Breed Types of Sheep and Swine—Required in the Animal Husbandry course. Four hours attendance, two credits, junior year, first semester, Veterinary, senior year. Prerequisite, 51.
Mr. Gilbert

55.—Breeds of Farm Animals—A course in which the breeds of all classes of live stock are taken up. Required in the Animal Husbandry course, junior year, and Veterinary Medicine, sophomore year, three hours attendance, three credits. Text, Plumb's "Types and Breeds of Farm Animals." Mr. Gilbert

56.—Beef Production—Modern methods of producing beef for the market, economic conditions to be considered, feed yard equipment, breeding or selection of stock, feeding and management.

Required in the Animal Husbandry course. Prerequisite, 53. One hour attendance, one credit, junior year, second semester. Lectures, assigned work and Mumford's "Beef Production." Mr. Morton

57.—Meats—A study of meat and the cuts of meat from the producer's standpoint. The effect of feed on the quality of meat, the chemical composition of meats, dressing carcasses, and curing meats. Elective, two hours attendance, one credit, junior year, second semester. Lectures and demonstrations. Mr. Dvorachek

58.—Milk Production—Principles of dairy farming, economic and sanitary milk production, available feeds, management of herd, keeping of records of individual cows. Prerequisite, 53. Elective, one hour attendance, one credit, junior year, and required second semester sophomore year, Veterinary Medicine. Lectures. Mr. Dvorachek

59.—Marketing Live Stock—A study of market classifications, shipping, shrinkage and methods of marketing.

Required in the Animal Husbandry course. Two hours attendance, two credits, senior year, first semester. Mr. Gilbert

60.—The Horse—The horse as a machine; selection, breeding care and training of horses.

Required in the Animal Husbandry course. Prerequisite, 52. Two hours attendance, two credits, senior year, first semester.
Mr. Dvorachek

61.—Animal Breeding—Includes work on the principles, methods and practice of breeding; a study of heredity, atavism, variation and allied subjects and the methods of breeding farm animals practiced by the leading improvers of live stock.

Required of Animal Husbandry seniors and Veterinary Medicine juniors. Three hours attendance, three credits, second semester.
Mr. Morton

62.—Judging Breed Types of Horses and Cattle—Advanced judging following the various breed standards. Besides using the large number of animals owned by the college, trips are planned to a number of stock farms in Northern Colorado for the purpose of bringing the student into touch with leading herds of all the well-known breeds.

Required in the Animal Husbandry course. Prerequisite, 52. One and one-half credits (two hours per week from the ninth to twelfth weeks inclusive), senior year, second semester. Mr. Morton

63.—Sheep Raising—Practical side of breeding; handling on the farm and range; lamb feeding. Elective, one hour attendance, one credit, senior year, first semester. Mr. Gilbert

64.—Swine Husbandry—Pork production; swine breeding; relation of industry to dairy farming; economical rations; hog farming. Prerequisite, 53. Elective, two hours attendance, two credits, junior year, second semester. Mr. Morton

65.—Pedigree Work—Sets of all the leading American and several foreign herd books are available for this work. A close study of pedigrees, and of the methods of writing and recording them. Elective, two hours attendance, one credit, junior year, second semester. Assigned work. Mr. Dvorachek

66.—Dairy Manufactures—A study of the composition of cow's milk; the separation of cream by gravity and by centrifugal means; the Babcock method of testing for butter fat; the handling of milk, ripening of cream; making of butter; bacteriology of butter, cheese, etc. Four hours attendance (two hours text and two hours laboratory), three credits, required second semester, junior year. Fee, $2.00.
Mr. Gilbert

67.—Animal Husbandry Seminar—Students work up selected subjects and report on them, making use of current literature and recent experimental and research work. The recitation period is devoted to discussion. Prerequisites, 53, 55. Elective, two hours attendance, two credits, first semester (Taught in 1913-1914.) Mr. Dvorachek

68.—Live Stock Practicums—Instruction and practice in cleaning and grooming animals, splicing rope and making halters, braiding manes and tails, fitting for show, fitting harness to horses, throwing cattle, shearing sheep and performing common live stock operations.

One credit (two hours per day; thirteenth to sixteenth weeks, inclusive), senior year, second semester. Elective.

Mr. Morton and herdsmen

69.—Animal Husbandry Seminar—A continuation of 67. Prerequisites, 53 and 55. Elective. Two hours attendance, two credits, second semester. (Taught in 1913-1914.)

Messrs. Morton, Dvorachek, and Gilbert

70.—Animal Nutrition—A study of the principles of nutrition and of the most recent work done in that line. Prerequisites, 53, 152, 153, 154, 155. Elective, three hours attendance, three credits, senior year, second semester. Texts, Kellner's "Scientific Feeding of Farm Animals" and Lusk's "The Science of Nutrition." Mr. Dvorachek

Mortgage Lifters

71.—Poultry Husbandry—Practical instruction in housing, feeding and caring for fowls; judging breeds and types; incubating and rearing chicks, fattening and marketing. Students will be required to plan poultry buildings, brooders and brooder houses, feeding appliances, etc., and help in their construction; also to take charge of the work of caring for fowls, incubating and rearing chicks. Elective, five credits, seven hours attendance (three hours text and four hours laboratory), senior year, second semester. Mr. Vaplon

72.—Creamery Work—Advanced work is given in testing dairy products, creamery calculations, cream ripening, starters, churning, packing and marketing of butter, composition of butter, judging butter, cheese making, etc. Prerequisite, 66. Elective, four hours attendance, two credits, senior year, second semester. Fee, $2.00.
Mr. Gilbert

73.—Experimental Methods—A study of modern methods of livestock experimentation, accompanied by practice in conduct of an experiment. Elective, first semester, senior year, five credits. Lectures and assigned work.
Mr. Morton

74.—Animal Husbandry Seminar—Work similar to course 67. Prerequisites, 53, 55. Two hours attendance, two credits, first semester. (Taught in 1914-1915.)
Mr. Dvorachek

75.—Animal Husbandry Seminar—A continuation of course 74. Two hours attendance, two credits, second semester. (Taught in 1914-1915.)
Messrs. Morton, Dvorachek, and Gilbert

76.—Dairy Inspection—Principles and practice of dairy inspection.
Mr. Dvorachek

BOTANY AND FORESTRY

B. O. LONGYEAR	Professor
W. W. ROBBINS	Assistant Professor

101.—General Botany—In this subject the student takes up the study of plants in the probable order of their development, beginning with the lowest and simplest forms and ending with the highest types. Thus the algae, mosses, liverworts, ferns, and seed plants are studied with the idea of giving the student a general view of the main divisions of the whole plant kingdom according to their natural relationships. With the higher plants comparative studies are made of roots, stems, and buds, leaves, flowers, fruits, and seeds, from the standpoint of their morphology and ecology. Simple and compound microscopes are used and records are kept in the form of notes and drawings. Required of all students in the Division of Agriculture and Veterinary Medicine. Three lecture hours, four laboratory hours, five credits, first semester, freshman year. Fee, $1.00.
Mr. Robbins

101A.—General Botany—The above course varied by the study of economic plant products such as starches, oils, spices, extracts, grains, fibers, etc., together with a brief consideration of the common diseases of ornamental plants, is an alternative, required in the Division of General Science and Home Economics. Three lecture hours, four laboratory hours, five credits, first semester, freshman year. Text, "Plants and Their Uses," Sargent. Fee, $1.00. Mr. Robbins

102.—Economic Botany—This deals with the botanical characters of the plants with which the agriculturist is most directly concerned; with the plants which constitute the crops of the farm, orchard and garden. Required of all students in the Division of Agriculture. Prerequisite, 101. Four hours attendance, two credits, second semester, freshman year. Mr. Robbins

103.—Plant Histology—This deals with the minute structure of plants or the morphology of tissues, and is carried on by means of the compound microscope. Required in Agronomy and Horticulture courses. Prerequisite, 101. Four hours attendance, two credits, first semester, junior year. Text, "Plant Anatomy," Stevens. Fee, $1.00.
Mr. Robbins

Horticultural Hall and Greenhouse

104.—Plant Physiology—This deals with the fundamental processes of plant growth, absorption, conduction, transpiration, metabolism, and irritability. Required in Entomology, Horticulture, and Forestry courses. Prerequisite, 103. Three hours attendance, three credits, second semester, junior year. Text, "Plant Physiology," Duggar. Mr. Robbins

105.—Experimental Plant Physiology—The student investigates physiology of plants by means of suitable apparatus. Experiments are performed with plants in the laboratory and greenhouses and the results are tabulated for the drawing of conclusions. Elective for students in the Agricultural group. Prerequisite, 104. Six hours attendance, three credits, first semester. Text, "Plant Physiology," by Ganong. Fee, $2.00. Mr. Longyear and Mr. Robbins

106.—Systematic Botany—An advanced course in the study of native and introduced seed plants of the state as to their systematic relations. It is carried on by means of laboratory work and field excursions. Elective. Prerequisites, 101 and 102. Six hours attendance, three credits, second semester. Mr. Robbins

107.—Economic Fungi—The species of fungi which are the causes of the various diseases of plants, especially those of the farm, orchard and garden, are studied both as to their systematic relations and their economic importance. Required in Agronomy, Entomology, Forestry, and Horticulture courses. Must be preceded by 103. Laboratory work with lectures and reference reading. Six hours attendance, three credits, first semester, senior year. Text, "Fungous Diseases of Plants," Duggar. Fee, $1.00. Mr. Robbins

108.—Elements of Forestry—A general study of what forestry is, its history and development, its aim and especially its relation to agriculture. A suitable text, together with lectures, will be used. Prerequisites, 101 and 102. Required, two hours attendance, two credits, first semester, junior year. Text, "Primer of Forestry, Parts I, II," Pinchot. Mr. Longyear

109.—Dendrology—A systematic study of the botanical characters, distribution, habits and economic qualities of the different trees. The work is laboratory in character and is supplemented with field work in identification of trees and shrubs. Some attention is also given to the ecological requirements of the plants studied. Seeds of trees and shrubs are collected and stored for planting, and cuttings are taken of those species adapted to that method of propagation. Prerequisites, 101 and 102. Required, one hour lecture, four hours laboratory, three credits, first semester, junior year. Text, "Manual of the Trees of North America," Sargeant. Mr. Longyear

110.—Dendrology—This is a continuation of 109, which is prerequisite. Required, second semester, junior year, three credits. Mr. Longyear

111.—Silviculture—A study of the reproduction of trees. The various systems of regeneration, transplanting, and thinning are considered. Practical work is taken up in preparing seed beds, planting the seed, and caring for the seedlings, and other processes in the production of forest nursery stock. Comparisons between artificially and native grown stock are made and collection of natural seedlings is taken up in the nearer forested regions.. Required. Prerequisites, 109 and 110. One hour lecture, four hours laboratory work; three credits, second semester, junior year. Mr. Longyear

Upper Limit of Forestry Students' Activities

112.—Wood Technology—The structure and the physical and chemical properties of wood are presented in the form of lectures and a suitable text. The uses of wood in the various commercial ways, together with methods of harvesting, seasoning, and marketing forest products are considered. Required. Prerequisites, 103, 109 and 110. One hour attendance, one credit, second semester, senior year. Mr. Longyear

113.—Wood Technology Laboratory—This is work supplementary to 112. The structure of wood is studied, both with and without the aid of the microscope, from prepared sections and other material. The student also practices the identification of the more important commercial woods. Four hours attendance, two credits, second semester, senior year. Mr. Longyear

114.—Forest Mensuration—The time in this subject may be taken up in part in completing the silvicultural work of the preceding year and in conducting further operations and studies along the same lines. Especial attention, however, will be given to studies of the methods of measurements in estimating the increment in the growth of trees, the volume of single trees and timber stands and their application to practical work in the forest valuation. Required. One hour lecture, four hours laboratory, three credits. Prerequisites, 110, 112 and 113. First semester, senior year. Mr. Longyear

115.—Tree Pathology—The diseases to which trees are subject are discussed by means of lectures and text book work. Specimens showing the most important timber diseases will be freely used to illustrate this subject. Elective. One hour attendance, one credit. Prerequisites, 113 and 118. Second semester, senior year.

Mr. Longyear

116.—Forestry Seminar—During this period the special phases of forestry, and current literature are discussed. Elective. Two hours attendance, two credits, first semester, senior year.

Mr. Longyear

117.—Forestry Policy—Matters relating to state and national forest holdings; the laws relating to their management and the subject of taxation, benefits, fire laws, and forest legislation, as it concerns the use of our forest reserves, are here considered. Required. Two hours attendance, two credits, second semester, senior year.

Mr. Longyear

118.—Forest Management—Considers the theoretical and practical handling of a forested area. Working plans and estimates are prepared from data secured through the study of some special problem chosen by the student and pursued under the direction of the instructor. Required. One hour lecture, four hours laboratory, three credits. Prerequisites, 111 and 114. Second semester, senior year.

Mr. Longyear

119.—Timber Preservation—The decay of wood; the prevention of decay by the various methods of seasoning, carbonization, coating.

injection, and open tank treatments are considered. The well equipped timber treating plant on the college grounds, installed under the direction of the forest service, is available for demonstration and experimental work in this subject. Elective. Two hours attendance, one credit, first semester, senior year. Laboratory work, lectures and reference reading. Mr. Longyear

120.—Ecology of Plants—A study of plant associations and the individual plant organism and its various parts in relation to the environment. Detailed study is made of roots, leaves, stems, flowers, fruits and seeds as to their origin, role and variation. An advance course open only to those having had general botany, plant histology and plant physiology. Special attention is given to crop and forest ecology. Elective. Three hours attendance, three credits, second semester. Reference reading. Text, "A Textbook of Botany," Vol. II., Ecology, Cowles. Mr. Robbins

CHEMISTRY AND GEOLOGY

W. P. HEADDEN	Professor
C. E. VAIL	Assistant Professor
R. HERTWIG	Instructor

151.—Inorganic Chemistry—Lectures and text-book study include the principles of the science; discussion of both the non-metals and metals; typical and important compounds. Required in Division of Mechanic Arts, sophomore year. Three hours attendance, three credits, first semester. Text, Kahlenberg's "Outlines of Chemistry." Mr. Hertwig

152.—Qualitative Analysis—Laboratory exercises. Required in Division of Mechanic Arts, sophomore year. Prerequisite, 151. Four hours attendance, two credits, second semester. Fee, $4.00. Mr. Hertwig

153.—Inorganic Chemistry—Lectures and text-book study, similar to 151. Required in Division of Veterinary Medicine, freshman year. Three hours attendance, three credits, first semester. Text, Holland's "Medical Chemistry." Mr. Vail

154.—Qualitative Analysis—Laboratory exercises. Required in Division of Veterinary Medicine, freshman year. Prerequisite, 153. Four hours attendance, two credits, second semester. Fee, $4.00. Mr. Vail and Mr. Hertwig

155.—Organic Chemistry—Lectures and text-book study. Thorough drill on structures, relations, and properties of typical and important organic compounds. Prerequisite, 153. Required in Division of Veterinary Medicine, freshman year, three hours attendance, three credits, second semester. Text, Holland's "Medical Chemistry."
Mr. Vail

156—Organic and Physiological Chemistry—Laboratory exercises designed to familiarize the student with the properties and reactions of typical and important compounds, preparations and qualitative tests. Required in Division of Veterinary Medicine, sophomore year. Prerequisites, 153, 154, 155. Four hours attendance, two credits, first semester. Text, Holland's "Medical Chemistry." Fee, $5.00.
Mr. Vail and Mr. Hertwig

157.—Examination of Milk—Required in Division of Veterinary Medicine, sophomore year. Prerequisites, 153, 154, 155. Two hours attendance for five weeks (or equivalent), one-fourth credit, first semester. Text, Holland's "Medical Chemistry," with collateral reading. Fee, $1.50 for 157, 158.
Mr. Vail and Mr. Hertwig

158.—Urine Analysis—Required in Division of Veterinary Medicine, sophomore year. Prerequisites, 153, 154, 155. Two hours attendance for five weeks (or equivalent), one-fourth credit, first semester. Text, Holland's "Medical Chemistry," with collateral reading.
Mr. Vail and Mr. Hertwig

159.—Inorganic Chemistry—Lectures and text-book study, covering the chemistry of the non-metals. Required in Divisions of Agriculture and General Science and Home Economics, sophomore year. Three hours attendance, three credits, first semester. Text, Kahlenberg's "Outlines of Chemistry."
Mr. Vail

160.—Inorganic Chemistry—Continuation of 159. Lectures and text-book study covering the chemistry of the metals. Prerequisite, 159. Three hours attendance, three credits, second semester.
Mr. Vail

161.—Qualitative Analysis—Laboratory exercises. Required in Divisions of Agriculture and General Science and Home Economics, sophomore year. Prerequisites, 159, 160; or, 160 may be taken simultaneously. Six hours attendance, three credits, second semester. Fee, $6.00.
Mr. Vail and Mr. Hertwig

162.—Organic Chemistry—Lectures and text-book study on the aliphatic series. Required in Divisions of Agriculture and Home Economics, junior year. Prerequisites, 159, 160, 161. Three hours attendance, three credits, first semester. Text, Perkin & Kipping's "Organic Chemistry." Mr. Vail

163.—Organic Laboratory—Exercises designed to familiarize the student with the properties and reactions of typical and important compounds, preparations and qualitative tests. Required in the Divisions of Agriculture and Home Economics, junior year. Accompanies 162. Prerequisites, 159, 160, 161. Four hours attendance, two credits, first semester. Fee, $5.00. Mr. Vail and Mr. Hertwig

164.—Organic Chemistry—Lectures and text-book study on the aromatic series. Continuation of 162. Prerequisites, 159, 160, 161, 162, 163. Three hours attendance, three credits, second semester. Mr. Vail

165.—Organic Laboratory and Agricultural Analysis—Continuation and expansion of 163. Accompanies 164. Application of the principles of inorganic and organic qualitative analysis to soils and agricultural products, in addition to exercises on organic compounds, similar to 163. Prerequisites, 159, 160, 161, 162, 163. Four hours attendance, two credits, second semester. Fee, $5.00. Mr. Vail and Mr. Hertwig

166.—Agricultural Chemistry—Lectures, text and collateral reading on the chemistry of soils and agricultural products, including discussion and study of the methods employed for their analysis. Elective. Two hours attendance, two credits, second semester. Prerequisites, 159, 160, 161, 162, 163, 164, 165. Text, Lincoln & Walton's "Agricultural Analysis," Johnston's "Agricultural Chemistry," and Bulletin 107, revised, Bureau of Chemistry, U. S. Dept. of Agriculture. Mr. Vail or Mr. Hertwig

167.—Geology—Required in the Agronomy, Entomology and Horticultural courses, junior year; in the Forestry course, senior year. Prerequisites, 159, 160, 161, or their equivalents. Two hours attendance, two credits, first semester. Text, Blackwelder & Barrows' "Elements of Geology." Mr. Vail

168.—Mineralogy—Discussion of the principles of crystallography, followed by the systematic, descriptive, determinative and economic study of minerals. Elective. Prerequisites, 159, 160, 161, or their equivalents, and 167. One hour attendance, one hour credit, second semester. Text, Hatch's "Mineralogy." Mr. Vail

CIVIL AND IRRIGATION ENGINEERING

EDWARD B. HOUSE.........................Professor
*RALPH PARSHALL.............Assistant Professor
OLIVER PENNOCK...............Assistant Professor

201.—Surveying—This course covers the principles underlying the practice of surveying, including the use of chain and compass, in measuring angles and distances, a discussion of the errors that may occur, the balancing of surveys and plotting of field notes, and all other computations that may occur in the course of preparation of a complete map. Particular attention is paid to correct methods of taking field notes. Prerequisite, trigonometry. Three hours attendance, three credits, second semester, freshman year. Required in Divisions of Agriculture and Mechanic Arts. Text, "Hosmer & Breed," Vol. 1.
Mr. Pennock

202.—Field Work—Practice in the use of compass and level. Taken with 201. Practical problems in land surveying and mapping. Four hours attendance, two credits, second semester, freshman year. Required in Divisions of Agriculture and Mechanic Arts. Fee, $2.00.
Mr. Pennock

203.—Surveying—This course is a continuation of that offered in the second semester, freshman year. It is devoted to the use of the transit and the discussion in greater detail of general and practical methods in use in special classes of survey work, topographic and hydrographic work, etc. The determination of the true north by means of observations on Polaris, and by means of the solar attachments is taught, as is also the investigation of the systematic errors of the transit and level and the means of correcting the same. Stadia methods are taken up, and in this and the other kinds of work it is the aim to produce quick and accurate instrument men. Prerequisites, 201, 202. Three hours attendance, three credits, first semester, junior year. Required. Text, "Hosmer & Breed," Vol. 2. Mr. Pennock

204.—Field Work—Transit and solar work taken in connection with 203. Prerequisites, 201, 202, 203. Six hours attendance, three credits, first semester, junior year. Required. Mr. Pennock

205.—Canal Surveying—Reconnaiseance, preliminary, and location surveys; simple, compound, and transition curves; earthwork, covering the usual methods of computing volume and haul and shrinkage of earthwork; details of construction of the typical canal; covering the effect of grade and curvature on the operation of the canal and the theory of the correct balancing of these features. Prerequisites, 201,202, 203. Two hours attendance, two credits, second semester, junior year. Text and lectures. Required. Mr. Pennock

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*Resigned Feb. 12, 1913.

206.—Field Work—This course is taken with 205. A preliminary survey for a line of railroad is made and plans and profiles drawn. From this data, the usual calculation of quantities is made, and the office location projected. This office location is then put on the ground, and cost estimates made. Prerequisites, 201, 202, 203. Four hours attendance, two credits, second semester, junior year. Required. Fee, $1.00. Mr. Pennock

207.—Field Camp—Two weeks before the opening of college in the fall, the sophomore, junior, and senior students in Civil Engineering spend two weeks in the mountains. The sophomores act as rodmen for the upper classmen; the juniors act as instrument men on the survey of a proposed reservoir or other topographic work; and the seniors

Ready for the Day's Work

have charge of the parties and are held responsible for the accuracy of the work. Two credits. Required.
Mr. House and Mr Pennock

208.—Drafting—This time is given to the platting of the surveys in the field camp of the previous summer. The methods of map making, which have been previously studied, here receive further exposition by their practical application to problems, all details of which the student has followed from the time of the beginning of the surveys. In the case of the surveys that have to do with water rights, all the necessary forms that have to be complied with in the filing of claims are studied, and the maps are made to conform to them. Prerequisite, 207. Six hours attendance, three credits, first semester, junior year. Required.
Mr. Pennock

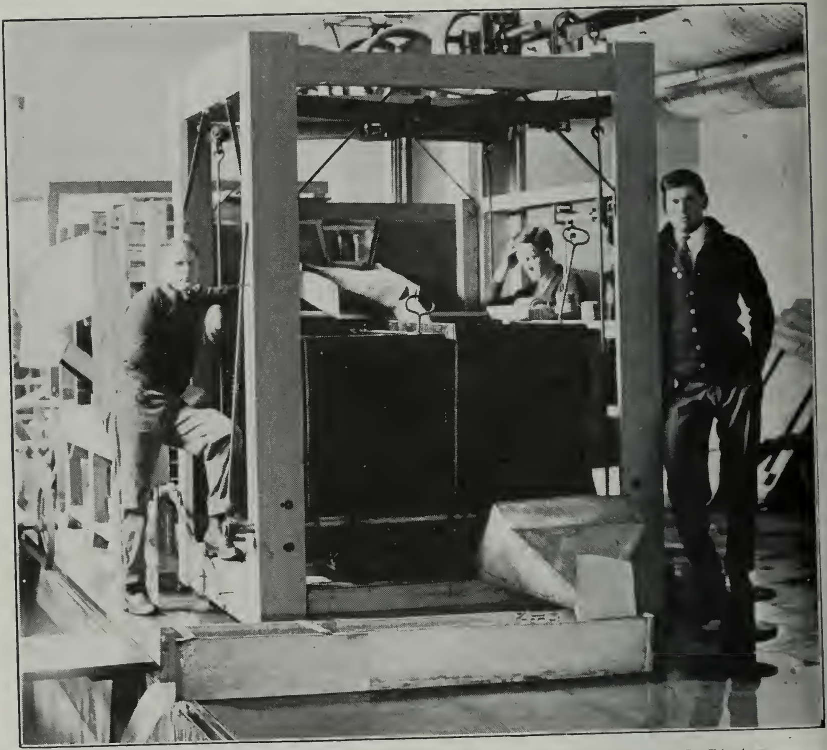
209.—Drafting—This is a continuation of the drafting course of the junior year. Prerequisite, 207. First semester, senior year. Four hours attendance, two credits. Elective. Mr. House

210.—Photography—This subject has lately become of great importance and value to the engineer, for it gives him a means of making records of works in process of construction, for taking notes in the field and often for making surveys in reconnaissance. Each student is given instruction in the selection and the use of a camera, in development of plates and in printing from negatives. He is required to take photographs, to develop his own plates, and to make prints from the same on different papers. Attendance one hour, one credit, first semester, junior year. Elective. Fee, $2.00. Mr. House

211.—Irrigation Engineering—The principles of irrigation, the duty of water, the measurement of water, the location of irrigation systems, the location of diversion weirs, headgates, and flumes, design and construction of headgates, flumes, and drops, are taught. The methods of irrigation as practiced in different parts of the country are taken up, and the student is given a thorough understanding of the methods of location of an irrigation system and its proper management. Prerequisite, 201. Three hours attendance, three credits, second semester, junior year. Text, Wilson's "Irrigation Engineering," supplemented by lectures. Required. Mr. House

212.—Hydraulics—A thorough course in theoretical hydraulics as presented by modern authors. Prerequisite, Integral Calculus. Five hours attendance, five credits, second semester, junior year. Required. Text, Merriam's "Theoretical Hydraulics." Mr. House

213.—Hydraulic Laboratory—The use of meters for measuring the velocity of water in streams and the experimental determination of the constants for different hydraulic formulas together with the testing of water motors and pumps of all kinds. Given with 212. Four hours attendance, two credits, second semester, junior year. Required.
Mr. House



In the Best Equipped Irrigation Laboratory in the United States

214.—Meteorology—A study of the movements of the atmosphere, the formation, progress, and prediction of storms, together with the climate of different countries. Methods of taking meteorological observations, the keeping of records and interpretation of the same are taken up. One hour attendance, one credit, second semester, senior year. Elective. Text, "Waldo's Elements of Meteorology." Mr. House

215.—Canal Management—This course is intended to give an intelligent knowledge of the problems of such duties as will qualify the students technically for taking part in administration in the distribution of water when acting as water commissioners or canal superintendents. One hour attendance, one credit, second semester, senior year. Prerequisites 211 and 212. Lectures. Elective. Mr. House

216.—Water Supply—This course treats of the methods of procuring an ample supply of water for irrigation and domestic purposes. The source of supply, the manner of conveying, storing, and distributing the water. Prerequisites, 211, 212. Two hours attendance, two credits, first semester, senior year. Lectures. Elective. Mr. House

217.—Drainage—An investigation of alkalied and seeped lands, the cause and remedy for this condition; an investigation of different drainage systems and the proper installation and operation of the same. One hour attendance, one credit, second semester, senior year. Prerequisites 211 and 212. Elective. Mr. House

218.—Dams—The principle of stability of dams, the methods of dam construction, and the materials to be used. The selection of the proper site for the dam and all the necessary work of design, location, and construction are treated at length. Prerequisites, 211, 212. Two hours attendance, two credits, second semester, senior year. Lectures. Required. Mr. House

219.—Strength of Materials—This course is the application of the principles of mechanics to the investigation of the stress in and strength of the various materials used in construction. The laws of stress is simple, cantilever, and continuous beams, in materials in direct tension or compression, and in columns and struts, are investigated. Torsion in shafts, stresses in pipes under pressure, strength of riveted joints, simple and combined stresses, temperature stresses, laws of elasticity, resiliance in work, are treated in length. Numerous problems illustrate the practical application of theoretic truths and laws. The general characteristics of the principal materials, wood iron, cement, concrete, and steel are discussed. Prerequisites, physics and integral calculus. Five hours attendance, five credits, first semester, junior year. Text, Merriam's "Mechanics of Materials." Required in division of Engineering.
Mr. Pennock

220.—Testing Laboratory—Taken with 219. Actual tests of the tensile and compressive strengths of specimens are made on a 50,000-pound testing machine. Fluxural tests are made and give data for computing the Modulus of Elasticity of the tested material. A discussion of the materials of engineering is included. Two hours attendance, one credit, first semester, junior year. Elective. Fee, $1.00

Mr. Pennock

221.—Trusses and Bridges—In this course the methods of computation of the stresses on roof and bridge trusses are applied. The common forms of trusses, such as the Howe, Pratt-Warren, Baltimore, Bowstring, and Parker are investigated under the dead and live loads and the stresses in different members are figured. Live load stresses are figured for both uniform load and concentrated axle loads. Prerequisites, 219, 220. Four hours attendance, four credits, first semester, senior year.

Mr. Pennock

222.—Concrete—Under this head, the whole subject of concrete and concrete construction is investigated. The materials used, the proper proportions, the correct manner of mixing, reinforcing and placing, all receive careful attention. Concrete structures of all kinds are carefully considered. Prerequisite, 219. Two hours attendance, two credits, second semester, senior year. Elective. Text, Taylor & Thompson's "Concrete."

Mr. House

223.—Engineering Design—The student is required to select, either from his own ideas, or with the advice and assistance of the professor, some engineering project, to design the same, and submit working drawings for it. Prerequisite, 219. Six hours attendance, three credits, first semester, senior year. Lectures and drafting. Required.

Mr. House

224 and 254.—Contracts and Specifications—The part that engineers are frequently called upon to play in making of contracts and the writing of specifications makes this subject necessary. In this course the student is taught the essential elements in the writing of contracts and specifications. One hour attendance, one credit, first semester, senior year. Required. Text, Johnson's "Contracts and Specifications."

Mr. Thomas and Mr. Pennock

225.—Highway Construction—This deals with the methods of modern road construction. Special attention is given to earth roads, their location, drainage, and repair. Two hours attendance, two credits, second semester, senior year. Elective. Text, Frost's "Art of Road Making."

Mr. House

226, 227, 228, 229.—Seminar—Seminar work is given in the last two years of the course and consists in the preparation of papers on engineering problems and on the construction of engineering works.

These papers are read before the class and discussed. The object of the work is to encourage as much outside reading as possible, and to make the student conversant with the engineering feats of the present day. Elective. One hour attendance, one credit each semester.

Mr. House and Mr. Pennock

230.—Thesis—In the senor year a suitable thesis is required upon some engineering project. This is required of all students in the department. Second semester, senior year, two credits. For seniors only.

Mr. House

231.—Irrigation Laboratory—This work takes up the testing of different irrigation structures such as flumes, pipes, headgates, pumps, etc. First semester, senior year, four hours attendance, two credits. Prerequisites 211 and 212. Elective. Fee, $1.00 Mr. House

232.—Irrigation Laboratory—This subject consists of advanced work in the irrigation laboratory and irrigation work in the field. Prerequisite, 213. Six hours attendance, three credits, second semester, senior year. Fee, $1.00 Mr. House

233 —Graphic Statics—This is taken up with 221 Roofs and Bridges, and treats of the elementary principles of equilibrium of forces and also the graphical determination of center of gravity and moment of inertia. The graphical solution of the stresses in simple roof trusses and bridges. Prerequisites, 219 and 221. One hour attendance, one credit, second semester, senior year. Elective. Text, Merriman & Jacoby, Part II. Mr. Pennock

Building a Model Road on the Campus

DEPARTMENT OF ENGLISH AND HISTORY

B. F. COEN	Professor
W. R. THOMAS	Associate Professor
VIRGINIA H. CORBETT	Associate Professor
J. B. CRABBE	Instructor
ELEANOR CRAIG	Instructor
MRS. AGNES UPSON	Assistant

251.—Economics—Treats of topics of practical interest and importance to all who are engaged in productive industries; markets, transportation, labor, capital; money standards and the currency, banks and banking, taxation and public expenditures. Partially from the text and partially by lectures. Required in courses of Agronomy, Animal Husbandry, and General Science, first semester, senior year, and in Mechanic Arts, first semester, sophomore year. Two hours attendance, two credits. Text, Seager's "Political Economy." Mr. Thomas

252.—Sociology—An investigation into the various social conditions of the times, the relations of the individual to all the factors of modern civilization, the influence of these factors one upon another, and the part which each person plays in the social, educational, commercial, moral, and religious life of the community. Required in the General Science and Home Economics courses, first semester, junior year. Five hours attendance, five credits. Text, Small & Vincent's "Study of Society." Mr. Thomas

253.—Irrigation Law—A study of the history, growth, and development of irrigation statutes in all states where the artificial use of water is necessary for the production of crops. Special attention is given to the controlling opinions of the supreme courts of Colorado and of the United States. Required of students in Agronomy, Animal Husbandry, Entomology, and Irrigation Engineering. Students below junior standing may not elect this subject except by special permission. Two hours attendance, two credits, second semester, senior year. Text, Mills' "Manual of Irrigation." Mr. Thomas

254.—Contracts—Laws governing engineering contracts. Required in Civil and Irrigation Engineering course, first semester, senior year. One hour attendance, one-half term, one-half credit. Text, "Johnson on Contracts." Mr. Thomas

255.—Medical Jurisprudence—A course of twelve lectures on the law governing the practice of Veterinary Medicine, and the laws and regulations—state and national—governing the transportation of live stock. Required in the Division of Veterinary Medicine, first semester, senior year. One hour attendance, one-half credit. Mr. Thomas

The East Gate

256.—Constitution of the United States—Instruction is given concerning the events and causes which led to the formation of the national government as it exists today, and the same traced to their historic sources. The workings of the federal government, together with its relations to the states, are also amply illustrated by frequent class lectures. Such information is due at the hands of every institution maintained by state or national aid as tending to better fit its graduates for the duties of citizenship, and for the responsibilities, of a republican form of government, which rest with especial weight upon those who have received their education free at the hands of the state or nation. Required in the Division of Mechanic Arts. Three hours attendance, three credits, first semester, sophomore year. Text, Hinsdale's "American Government." Mr. Thomas

257.—Industrial History—The development of the complex industrial life of today. The course includes a review of industrial conditions in primitive England, of the days of the English manor, follows the changes which produced the guild organizations, the domestic system of industries in the United States, the changes resulting from the factory system, and the consequent labor conditions. Elective. First semester, three hours attendance, three credits. Text, "Industrial History of the United States," by Coman, supplemented by library reference work, and first hand study of some phase of industrial life by each member of the class. Miss Corbett

258.—Advanced History—Study and practice in historical investigations; the laws governing human action; reciprocal influences of religion, literature, and government; comparisons and criticisms of past civilizations and their relation to modern progress. Lectures and library readings. Required in General Science and Home Economics courses. Two hours attendance, two credits, first semester, senior year. Text, Adams' "European History." Mr. Thomas

259.—Advanced History—Continuation of 258. Two hours attendance, two credits, second semester, senior year. Mr. Thomas

260.—English History—Valuable as a preparation for work in English literature, constitutional history, and political economy. The industrial development of the English people receives particular attention. Collateral readings from the leading authorities will be furnished by the library. Alternative in Home Economics and General Science courses. Second semester, sophomore year, three hours attendance, three credits. Text, Walker's "Essentials of English History."

Mr. Thomas

262.—English—Study of the principles of rhetoric. Elements of effective writing in prose based upon the study of selected authors. Analysis of modern prose. Much time is devoted to composition, written and oral. One long theme, 75 to 150 pages, is written during the year. The student must work out very complete plans, must become well acquainted with the library, and must learn to distinguish between the essential and non-essential in books and magazines. Required of freshmen in all courses except the Veterinary. First semester, three hours attendance, three credits. Texts, Bates' "Talks on Writing English," (first series), Woolley's "Handbook of Composition," and Berkeley's "Writing From Models." Mr. Coen and Miss Craig

263.—Continuation of English 262—Second semester, three hours attendance, three credits. Mr. Coen and Miss Craig

264.—Argumentation—Time is given to practice in argumentation and debate. Freshman English, prerequisite. Required of sophomores in the Agricultural division and in the General Science and Home Economics courses. Elective in other courses. First semester, three hours attendance, three credits. Text, Foster's "Argumentation and Debating." Mr. Coen and Mr. Crabbe

265.—Argumentation—Continuation of 264, Argumentation. About half of the time will be given to practice work. Second semester, two hours attendance, two credits. Mr. Coen and Mr. Crabbe

266.—Practical English—A short course in every day problems in English, the problems that men and women meet daily. Required of General Science seniors. Elective for other students. Freshman English, prerequisite. One hour attendance, one credit, first semester. Mr. Coen

267.—Development of Modern English—This course aims to show something of the development of the English language, taking up inflection, sounds, words, and grammar. Freshman English, prerequisite. Three hours attendance, three credits, second semester. Elective. Mr. Coen

268.—English Literature—A course in literature arranged for technical students. The general purpose of this course is to arouse an interest in good books, to develop the ability to judge their literary value, and to stimulate a desire for more knowledge of literature. One aim of the course is to familiarize the student with the arrangement and use of the college library, and to supply a working knowledge of its equipment, which may guide his reading during the college course and later. Required in all courses but Veterinary Medicine. First semester, freshman year, two hours attendance, two credits. Text, Newcomer's "Twelve Centuries of English Poetry and Prose."

Miss Corbett and Miss Craig

269.—Continuation of 268—Two hours attendance, two credits, second semester, freshman year.

Miss Corbett and Miss Craig

270.—The Drama—Lectures are given on the principles of dramatic art, with particular attention to character study, plot development, and the contrast between ancient classics and modern romantic drama. Illustrative readings are used in class, several plays of Shakespeare being studied as models of dramatic art. Prerequisite, freshman English. Two hours attendance, two credits, first semester. Elective.

Miss Corbett or Miss Craig

271.—American Literature—A study of the literary periods in our country, from colonial times to the present. Selections from the prominent American writers are chosen for class study, and additional library readings with reports are expected. Required in the General Science course, second semester, junior year. Two hours attendance, two credits, freshman English, prerequisite. Text, Simond's "History of American Literature."

Miss Corbett or Miss Craig

272.—Advanced Course in English Literature—Masterpieces from the poets of the seventeenth, eighteen, and nineteenth centuries form the basis for class study. Collateral readings with reports are expected. Required in Home Economics and General Science courses. First semester, senior year, three hours attendance, three credits.

Miss Corbett or Miss Craig

273.—English Literature—This is a continuation of 272. Special study is given to English prose forms. The works of the essayists and critics are followed by a study of English and American fiction. The novel is considered. Its structure and place in literature, and its service as a laboratory for character study are subjects for lectures. Special study is made of the short story. Required in courses in Home Economics and General Science. Five hours attendance, five credits, second semester, senior year.

Miss Corbett or Miss Craig

274.—History of Education—Educational development of the races. Many of the problems are taken up. Of special value to students that expect to teach. Elective. Five hours attendance, five credits, first semester. Text, "History of Education," (3 volumes) by Graves.

Mr. Coen

275.—Psychology—A course in the elements of Psychology. Study of the mind and its activities. Required of Home Economics and General Science juniors. Should be elected by students that expect to teach, or others interested in their own mental development. Five hours attendance, five credits, second semester, junior year. Text, Betts' "The Mind and Its Education," and one other text. Mr. Coen

276.—School Management—A course in the general principles of school management. Offered for those students that expect to teach. Elective, second semester, senior year. Three hours attendance, three credits. Text, Bagley's "Classroom Management." Mr. Coen

277.—Practical English—Continuation of 266. Elective, second semester, one hour attendance, one credit. Freshman English, prerequisite. Mr. Coen

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ENTOMOLOGY AND ZOOLOGY

CLARENCE P. GILLETTE	Professor
S. ARTHUR JOHNSON	Associate Professor
CHAS. S. MEAD	Assistant Professor
GEO. P. WELDON	Instructor
W. L. BURNETT	Curator

301—Physiology—Required in the Agriculture, Home Economics and General Science divisions. Three hours attendance, three credits, second semester, freshman year. Text, "The Human Mechanism," Hough and Sedgwick. Mr. Johnson

302.—Zoology—Required of the Agricultural Group and in Veterinary Medicine, alternative with mathematics in Home Economics, and General Science courses. First semester, sophomore year, three hours attendance, three credits. Text, "College Zoology," by Hegner. Mr. Johnson

303.—Elementary Entomology—Required of students in Entomology, Horticulture, and Forestry. A study of the structure, habits and classification of the insect kingdom. A special investigation of the habits of the more injurious species and the remedies that may be used to destroy them or prevent their depredations. Field excursions for observing insects under natural conditions. Classification and mounting of insects for permanent preservation. Over 100,660 mounted specimens of insects in the college collection. First semester, junior year, three hours class, three credits, and four hours laboratory, two credits. Text, "Entomology With Special Reference to Its Biological and Economic Aspects," by Folsom. Mr. Johnson and Mr. Mead

304.—Embryology—Required in the divisions of Agriculture and Veterinary Medicine. Study of the early stages in development, the general principles underlying the development of organic beings, and the laws of inheritance. Many references to outside reading will be given. First semester of the senior year. One hour attendance, one credit.
Mr. Mead

305.—Forest Insects—A series of lectures on insects injurious to forest trees. Required in the Entomology course, second semester, senior year. Two hours attendance, one credit. Mr. Gillette

306.—Advanced Entomology—Required in the Entomology course, first semester, senior year, ten hours attendance, five credits. Text, Comstock's "Manual for the Study of Insects."
Mr. Johnson and Mr. Weldon

307.—Advanced Entomology—Continuation of 306. Second semester, senior year, ten hours attendance, five credits.
Mr. Johnson and Mr. Weldon

Guggenheim Hall, Mechanical Building, Entomology Building

308.—Ornithology—A brief course in popular study of birds with their economic relations. Two hours attendance, two credits, second semester. Elective. Text, "Bird Life," by Chapman. Mr. Mead

309.—Zoology Laboratory—Stress is laid upon the structure, habits, and relationships of the different groups of the animal kingdom. Definiteness and accuracy of observation required. Required of students in the divisions of Agriculture and Veterinary Medicine. Six hours attendance, three credits. Mr. Mead

310.—Zoology Laboratory—Same as 309, but required in Home Economics and General Science group, four hours attendance, two credits.

Mr. Mead

311.—Evolution and Heredity—One lecture a week during the first semester in the senior year, dealing with the broad principles of development, the laws of heredity, and the application of these laws to the improvement of living things. Required in the divisions of Agriculture and Veterinary Medicine, one hour attendance, one credit.

Mr. Gillette

312.—Eugenics—A course of ten lectures offered to students in the upper classes. Relates to the most recent discoveries in human heredity and the application of the laws of heredity to human progress.

Mr. Gillette and Mr. Johnson

HOME ECONOMICS

INGA M. K. ALLISON	Professor
MARGARET H. HAGGART	Instructor
CHARLOTTE E. CARPENTER	Instructor
GRACE F. SMILEY	Instructor
MIRIAM H. HAYNES	Assistant
JESSIE E. BUTLER	Assistant
ZELMA E. BRIGGS	Assistant

351.—House Management and Sanitation—The care of the house from economic and sanitary standpoints; household accounts; the purchase of working equipment and supplies; the ventilation, heating and lighting of the house; the water supply; the disposal of wastes; the relation of the householder to health organizations; the home as a social center; rules for conduct; lectures, recitations, laboratory practice. Required of General Science and Home Economics students, four hours attendance, four credits, first semester, freshman year.

Miss Allison

352.—Domestic Architecture and House Furnishing—The site, surroundings and construction of the house; house plans suited to typical community conditions. Practice in drawing skeleton plans and elevations. Consideration of furnishings from sanitary and artistic viewpoints. Lectures, class discussions, collateral reading. Prerequisite, House Management and Sanitation. Five hours attendance, five credits, second semester, freshman year. Required of General Science and Home Economics students.

Miss Allison

353.—Personal Hygiene—The principles and preservation of health; the causes and preventatives for prevailing ills. Physiology and Personal Hygiene are offered as an alternative with mathematics. Two hours attendance, two credits, second semester, freshman year.
Miss Haggart

354.—Home Nursing—Includes the study of what to do in emergencies; the care of the sick, and the general care of the sickroom. Lectures and practical demonstrations. Required of Home Economics students, two hours attendance, two credits, first semester, senior year.
Miss Haggart

360—Foods I—Knowledge of the effect of heat, cold, or fermentation upon the composition of foods in so far as it will directly influence the preparation of food for the table; methods of food preparation that are fundamental in cookery. Technique receives special emphasis in this, which may be regarded as a preparatory course. Required of all Home Economics students not presenting entrance credits in domestic science. Four hours attendance, two credits, second semester, freshman year.
Miss Carpenter

361.—Foods II—This course serves as a basis for all later work in foods. Composition and characteristics of food stuffs; underlying principle in methods by which heat is applied to food stuffs; consideration of uses and relative values of various types of cooking apparatus; selection of foods; significance of terms "brands" and "blends." Required of General Science and Home Economics students. Prerequisite, 159, 161, Inorganic Chemistry. Six hours attendance, three credits, first semester, sophomore year. Fee, $2.00. Textbook, Hutchison's "Food and Dietetics." Laboratory manual outlined by the department.
Miss Carpenter

Simon Guggenheim Hall of Household Arts

362.—Foods III—Continuation of Foods II. Four hours attendance, two credits, second semester, sophomore year. Fee, $2.00.
Miss Carpenter

363.—Foods IV—The further development of principles and methods outlined in Foods II and Foods III. Food preservation; tests for adulteration; pure food laws. Extensive work with flour mixtures, including bread, cakes, and pastry. Required of Home Economics students electing the Domestic Science course. Prerequisite, Foods III. Preceded or accompanied by 162-164, Organic Chemistry. Eight hours attendance, four credits, first semester, junior year. Fee, $4.00.
Miss Allison

364.—Dietetics—Includes a consideration of dietary standards; balanced ration; relation of food to health; special consideration of the adjustment of quantity and quality of food necessary to the meeting of the varying conditions of age, occupation, health, etc. Required of Home Economics students electing Domestic Science. Prerequisites, Foods IV and Dietetics. Six hours attendance, three credits, second semester, senior year. Fee, $2.00. Miss Allison

365.—Serving of Meals—This course provides for the application of principles developed in courses in foods, including the cooking and serving of meals, and the preparation of school and picnic lunches. Wholesomeness of food served, attractive serving and the estimate of cost of food prepared are invariable features of the work. Required of Home Economics students electing Domestic Science. Prerequisites, Foods IV and Organic Chemestry. Four hours attendance, two credits, second semester, senior year. Fee, $2.00. Miss Haggart

375.—Sewing I—The making of models by hand, demonstrating the elements of hand sewing; the use of machines; making of machine models, showing the use of attachments. Required of Home Economics students. Six hours attendance, three credits, first semester, freshman year. Fee, $1.00. Miss Smiley and Miss Butler

376.—Sewing II—Drafting of patterns by measurements, applied in the making of a suit of underwear. The making of a tailored waist. Required of Home Economics students. Four hours attendance, two credits, second semester, sophomore year. Prerequisite, Sewing I. Fee, $1.00. Miss Smiley and Miss Butler

377.—Textiles I—Study of historical development of textile industries; consideration of economic and hygienic aspects of textiles; microscopic and chemical tests for physical and chemical characteristics;

dyeing; laundering. Required of Home Economics students electing Domestic Art. Four hours attendance, two credits, first semester, junior year. Prerequisites, Sewing I and II. Preceded or accompanied by Inorganic Chemistry. Fee, $1.00. Miss Smiley

378.—Textiles II—Continuation of Textiles I. Four hours attendance, two credits, second semester, junior year. Fee, $1.00
Miss Smiley

Chemistry is Basic in Home Economics

379.—Drafting and Design—Drafting and testing of patterns; dress design including consideration of color and proportion. Required of Home Economics students electing Domestic Art. Six hours attendance, three credits, first semester, junior year. Prerequisites, Sewing I and II. Fee, $1.00. Miss Smiley

380.—Dressmaking I—Use of dress forms; the making of a general service wash dress; the making of a wool dress. Required of all

Home Economics students electing Domestic Art. Four hours attendance, two credits, second semester, junior year. Prerequisites, Textiles I and II, and Design and Drafting. Fee, $1.00.
Miss Smiley and Miss Butler

381.—Dressmaking II—The making of a lingerie dress and a silk dress. Required of Home Economics students electing Domestic Art. Six hours attendance, three credits, second semester, senior year. Prerequisite, Dressmaking I. Fee, $1.00. Miss Smiley

382.—Art Needle Work—Making of needle work sample book; design; practical work in embroidery. Required of Home Economics students electing Domestic Art. Four hours attendance, two credits, second semester, senior year. Prerequisites, Sewing I and II, and Textiles I and II. Fee, $1.00. Miss Smiley

383.—Millinery—The covering of a buckram frame; the making and covering of a wire frame; trimming. Required of Home Economics students electing Domestic Art. Four hours attendance, two credits, first semester, senior year. Prerequisites, Sewing I and II. Fee, $1.00. Miss Smiley and Miss Butler

384.—Tailoring—The making of a wool, tailored suit. Elective. Four hours attendance, two credits, first semester, senior year. Prerequisites, Dressmaking I and II. Fee, $1.00. Miss Smiley

390.—Demonstration Course—This course provides an opportunity for the student to present in a public way problems in cookery, laundry practice, and sewing. Demonstrations that shall suit typical state conditions are planned and given by the individual student. Required of Home Economics students. Four hours attendance, two credits, second semester, junior year. Fee, $2.00.
Miss Allison

391.—Teachers' Course—In this course there is included a consideration of methods of presentation, the principles underlying the planning of curricula and equipment, practice in planning of curricula and equipment to meet typical conditions in the state, and observation of teaching in the School of Agriculture at the college, and of teaching in nearby towns. Required of all Home Economics students. Three hours attendance, three credits, first semester, senior year. Prerequisite, courses in Home Economics offered in the freshman and sophomore years. Miss Allison

392.—Household Economy—The historical development of the home; the present relation of the home to the community; problems of the modern household, economic, social, and legal. Open to junior and senior students. Two hours attendance, two credits, second semester. Elective. Miss Allison

393.—Special Problems—Gives an opportunity for the consideration of special problems that arise along home economics lines, and for which students are prepared by training and prerequisite work of the first three years of college. Elective. Four hours attendance, two credits, second semester, senior year. Fee, $2.00. Miss Allison

Guggenheim Hall from the South

HORTICULTURE

E. R. BENNETT	Professor
S. VAN SMITH	Instructor
JULIUS ERDMAN	Instructor

401.—Plant Propagation—This subject is required in the Agricultural division. It is designed to give the student a simple knowledge of the methods and practices employed in propagating plants for the greenhouse, garden, and orchard. Four hours attendance, two credits, second semester, sophomore year. Text, Bailey's "Nursery Book."

Mr. Smith

403.—Vegetable Gardening—The history, development, classification, methods of improvement and culture of the garden vegetables, small fruits, etc., are studied. Especial attention is given to adaptability of the various garden crops for commercial production in the different districts of the mountain states. This includes the cabbage, cauliflower, celery and strawberry industries here, and their relation to these crops in other places. Three hours attendance, three credits, second semester, junior year. Required in Horticulture. Text, "Vegetable Gardening," Green. Mr. Smith

404.—Orchard and Garden Craft—This work is designed to give the student practice in the field in setting and pruning fruit and ornamental trees, changing varieties in fruits in the orchard by grafting and budding, and in the field work in gardening. Elective. Four hours attendance, two credits, second semester, junior year.
Mr. Bennett and Mr. Smith

405.—Pomology—This includes a general study of the classification, history, principles, and practices of fruit growing with special reference to the conditions in the irrigated Rocky Mountain fruit districts. Required of horticultural students, first semester, senior year, three hours attendance, three credits. Mr. Bennett

406.—Pomological Laboratory—A study of fresh specimens of fruit and of fruit leaves, buds, etc., is made in the laboratory; so as to acquaint the student with the different standard varieties, their peculiarities of growth, etc. Occasional visits are made to orchards in the vicinity of the college for the purpose of studying the work in the field. Required of horticultural students, one-half first semester, senior year, four hours attendance, one credit. Fee, $1.00. Mr. Smith

407.—Thesis—This subject follows Pomological Laboratory, the last half of the first semester of the senior year. The work consists of original investigation of some horticultural subject under the direction of the head of the department. The equivalent of two hours a day twice a week is required. The data of the experiments connected with this work must be completed by the middle of the second semester of the senior year. Elective. One credit. Mr. Bennett

408.—Floriculture—This subject typifies the most intensive form of horticulture. The work consists of lectures on the composition of soils for growing plants in limited areas, the evolution of flower forms, colors, and the methods of manipulation of plants to secure the greatest size, beauty, and quantity of flowers from a small area of space. The work will also cover the history, classification, propagation, and culture of the more important florists' crops and general greenhouse construction and management. This subject is required of horticultural students first semester, senior year, two hours attendance, two credits.
Mr. Bennett

409.—Floriculture Laboratory—Floriculture laboratory is given in connection with floriculture. In this work the student is required to learn the names, habitat, history, and culture of the more common florist and greenhouse plants. Required of horticultural students, first semester, senior year, two hours attendance, one credit. Mr. Erdmann

410.—Landscape Gardening—Landscape gardening follows floriculture, second semester, senior year, required of students in horticultural course. The subject consists of a discussion of the principles of landscape architecture, with special reference to the laying out and care of the home grounds, parks, etc. This subject might be classed as a cultural subject, in that it covers the principles of painting, sculpture, and architecture with particular reference to the blending of forms and colors. It also includes a study of plant materials that may be used in the arid climates of the West and the effects obtained by their judicious use. Two hours attendance, two credits. Mr. Bennett

411.—Landscape Gardening Laboratory—This subject is given in connection with Landscape Gardening, and is designed to give the student a working knowledge in measuring and laying out the planting for home grounds, parks, etc., and to familiarize him with plants used for outside decorative purposes. Required of horticultural students. Second semester, senior year, two hours attendance, one credit.

Mr. Bennett

Class in Greenhouse

412.—Pomology Seminar—This subject consists of the study of the horticultural literature, such as bulletins, fruit and garden papers, and a prescribed course of reading of horticultural books. Discussions of the various subjects will accompany this reading. Required in the Horticulture course. Four hours attendance, two credits, second semester of the senior year. Mr. Bennett

LANGUAGE

SARAH I. KETTLE........................Professor

451, 452.—First Year French—A course in grammar, prose composition, reading and conversation. Alternative, required of sophomores in General Science and Home Economics courses. Five hours attendance, five credits each semester. Text, Chardenal's "Complete Course." Selected reading. Miss Kettle

453, 454.—Second Year French—A course in reading and conversation. This includes a critical study of modern French prose and scientific literature. Alternative, required of juniors in General Science course. Prerequisites, 451, 452. Five hours attendance, five credits each semester. Miss Kettle

455, 456.—First Year Spanish—A course in grammar, prose composition, reading and conversation, with especial emphasis placed on making this language of practical use to those whose work will take them among Spanish speaking people. Alternative, required of sophomores in General Science and Home Economics courses. Five hours attendance, five credits each semester. Text, Hills and Ford's "Spanish Grammar." Miss Kettle

457, 458.—German—Offered for those who wish to continue the subject in college. This course aims to make a practical application of the German already studied and includes prose composition, conversation, and the reading of current literature, especially scientific bulletins and newspapers. Alternative, required of juniors in General Science. Prerequisite, a good general knowledge of German grammar. Five hours attendance, five credits each semester. Miss Kettle

459.—Word Analysis—A course for the purpose of bringing out the force or signification of certain root-words, prefixes, and suffixes in common use. Required in division of Veterinary Medicine, second semester, freshman year. Two hours attendance, two credits.
Miss Kettle

Note: The five hour courses in second year French and German are divided into divisions of three hours and two hours. Students may elect one without the other.

THE LIBRARY

CHARLOTTE A. BAKER	Librarian
E. ARLENE DILTS	Assistant
CLARA A. GLIDDEN	Assistant

The College Library was founded in 1878 from books given by the faculty and interested citizens of Fort Collins. This has been increased each year by funds from the college income, and also by occasional gifts. These gifts now consist of the Annie Jones, Louis B. France, and Barton O. Aylesworth collections, with the Theodosia Ammons Memorial Library.

Beginning with 1901, the library began to grow rapidly and in 1905 was moved from the small room in the main building to the building vacated by the commercial department. Later a gallery and a mezzanine floor were added. Recently the north and south basements have been shelved to use as stack rooms.

The College Library

The College Library, which now contains 32,477 volumes and 26,000 pamphlets, consists of the general library, and eleven departmental libraries. The Experiment Station has its own library, and is not considered here. The general library is largely a reference collection, although certain books are lent. There is no fixed period for lending a book, as the time varies with the demand for a volume. Professors frequently request that books on a certain topic shall be kept in the library for reference part or all of the time. It frequently happens that a book which may be lent at one time for two weeks, later in the term may not be lent at all, or only from six at night until nine the following morning.

The Dewey decimal classification is used, and a dictionary catalogue is well along. This includes the books of all departmental libraries, all purchases since 1901, all of fiction, and all of biography and history.

Other classes are to be added as time permits of doing this back work. At present this catalogue has nearly 60,000 cards.

The sheep bound serial set of congressional documents, the publications of the U. S. Department of Agriculture, the Geological Survey and the Smithsonian Institution are represented in this catalogue, as well as other important serials. Where it is possible, printed cards are bought from the Library of Congress and other sources. Otherwise cards are typewritten.

The library subscribes to one hundred and thirty-five periodicals, and receives as donations many agricultural journals and state newspapers. Students can arrange to see their home paper by requesting said paper to place the College Library on its free list. In return the paper will receive News Notes, which is a weekly publication issued for the press, by the college.

On the shelves of the reference room can be found the leading standard reference books and the bound files of many of our best periodicals. To aid in the use of the latter, we have **Poole, The Readers' Guide, The Technical Press,** and other less known periodical indexes.

We hope to make this a strong scientific library, and we are trying to intensify along the lines of agriculture, engineering, house economics, public health, and industrial and agricultural education. The selection of books is carefully made with the aid of the faculty. It is the aim of the institution to gather a library which will form a broad collection of practical working material of permanent worth.

DOCUMENTS

By U. S. law, all agricultural colleges are depositories. This means that we are "authorized to receive copies of every publication printed by the Government and made for distribution. The average annual distribution of such libraries is about 1,000 books and pamphlets, requiring 50 feet of shelf space per year to accomodate them. All such books and documents when received at the proper libraries shall be kept there and not removed from such places."

This collection is for reference, and cannot be lent. In addition to the cards in our catalogue for the document sets mentioned above, we have a good collection of printed government catalogues and various monthly lists. We also have a special catalogue for all the publications issued by the various experiment stations of the United States and territories.

Our sets of agricultural documents are unusually complete for any section, and especially for the West. We expect to add largely to our collection of state documents during the coming year.

Besides the services with documents, the library gladly offers its assistance to libraries and individuals who wish to collect or purchase such material.

Use of Books.—This course teaches by means of lectures and practical problems, the use of catalogs, indexes, reference books, etc. A bibliography on some subject is required from each student. Student assistants for the library will be selected from those taking this work. The permission of the librarian is required before students may register for this course. Elective. One recitation, five hours laboratory work, two credits. The recitation is prepared during the laboratory time.

How to Use the Library

A student must register in the library if he wishes to use the library or borrow books. To do this, he should present his registration receipt or athletic card. It is best to attend to this during the first two days of college when one is presenting the registration receipt at classes.

A library fee of $2.00 is charged each student when he registers. A fine of five cents a day is charged for overdue books. "Reserved books" are lent for one hour with a fine of ten cents for each quarter-hour overdue.

Residents of Fort Collins may borrow books by paying a fee of $2.50 per year or ten cents a volume.

Desks are arranged in the north stack for the use of students who wish to study together.

In the reference room and periodical room in the south wing, students are expected to consider the comfort of people who come in for quiet study.

Miscellaneous Information

The library staff is for the use of the students, and it will cheerfully give all assistance possible to the student body. As this is a small library, the staff must be busy with clerical work at odd minutes, but this work is to be dropped whenever a student needs help. No student should hesitate to make his wants known.

The library is open from 8:00 a. m. to 9:00 p. m., excepting a noon hour, 12:30 to 1:00, and a supper hour, 5:45 to 7:00.

On Saturdays, the library is open from 8:30 a. m. to 5:30 p. m., but it is not open on Sundays.

Holiday hours, which are announced from time to time are 9:00 to 12:00 a. m., and 1:00 to 4:00 p. m.

PERIODICALS DONATED TO THE LIBRARY

Agricultural Gazette of New South Wales
Agricultural Journal of India
Agricultural Southwest — Wichita, Kansas
American Breeder's Magazine—Washington, D. C.
American Cultivator—Boston
American Food Journal—Chicago
American Issue
American Poultry World—Buffalo, N. Y.
American Poultryman—Lincoln, Neb.
American Swineherd—Chicago
American Wool and Cotton Grower—Boston
Anaconda World—Franklinville, N. Y.
Berkshire World—Springfield, Ill.
Bit and Spur—N. Y.
Boston Public Library Bulletin
Brooklyn Public Library Bulletin
Bulletin of the Carnegie Foundation
Bulletin of the New York Botanical Gardens
Canadian Poultry News — Owen Sound, Ontario
Canadian Horticulturist—Peterboro, Ontario
Canal Record
Canned Goods Trade—Baltimore
Carlson's Breeders—Norfolk, Neb.
Champion—Fort Collins, Colo.
Child and Animal Protection
City Farmer—Columbus
City of Denver
Clay, Robinson & Co.—Live Stock Reports—Chicago
Cold Storage
Colorado Dairyman—Fort Collins
Colorado Engineers' Magazine
Colorado Farmer—Fort Morgan
Colorado Fruit Grower — Grand Junction
Colorado University Studies
Conn. State Geological and Natural History Survey
Cornell Reading Course for Farmers
Dakota Farmer—Aberdeen
De Laval Monthly—N. Y.
Dodge Idea—Mishawaka, Ind.
Duroc Bulletin—Peoria, Ill.
Elgin Dairy Record—Elgin, Ill.
Engineers' Society of Western Penn. (Proceedings)
Farm and Breeder—Sioux City
Farm and Fireside—Springfield, O.
Farm and Orchard—Keyser, Ill.
Farm Poultry—Boston
Farmers' Advocate—Topeka
Farmers' Digest—Columbia, Penn.
Farmers' Review—Chicago
Farmers' Voice—Chicago
Field and Farm—Denver
Gas Review—Madison
Gefluegel-Zuechter—Hamburg, Wis.
Hacienda—Buffalo, N. Y.
Harvester World
Hoard's Dairyman—Ft. Atkinson, Wis.
Holstein Friesian Register—Battleboro, Vt.
Hood Farm News—Lowell, Mass.
Independent Farmer
Indiana Farmer—Indianapolis
Intermountain Poultry Advocate—Colorado Springs
Iowa Library Commission Quarterly
Iron Age—Grenlock, N. J.
Jewish Outlook—Denver
Journal of Department of Agriculture of Western Australia
Journal of Western Society of Engineers
Kansas Farmer—Topeka
Kentucky Trotting Record
Kimball's Dairy Farmer—Waterloo, Iowa
Kistler's Komments—Denver
Lamar Commercial Club Association Bulletin
Lariat—Denver
Layman Printer
Mark Lane Express Agricultural Journal & Live Stock Record—London
Milk Reporter—Sussex, N. J.
Missouri Valley Farmer—Topeka, Kansas
Monthly Catalog of U. S. Public Documents
Museum News
Natal Agricultural Journal

National Farmer—St. Louis, Mo.
National Harness Review—Chicago
National Poultry Magazine—Buffalo
Nature Guard
Nebraska Farmer—Lincoln
New York Public Library Bulletin
New York State Museum Bulletin
North Carolina Library Commission Reporter
Orchard and Farm—San Francisco
Pacific Fruit World—San Francisco
Pan American Union Bulletin
Peru To-day—Lima
Philippine Agricultural Review
Philippine Agriculturist and Forester—Los Banos
Pittsburg Carnegie Library Bulletin
Photo Topics
Poultry Keeper—Quincy, Ill.
Poultry—Peotone, Ill.
Poultry Success—Springfield
Poultry Tribune—Mt. Morris, Ill.
Practical Dairyman — Rutherford, N. J.
Pratt Institute Free Library Bulletin
Public Library—Chicago
Public Service
Ranch and Range—Denver
Reliable Poultry Journal—Quincy, Ill.
Remington Notes—New York
Review of Religions—India
Rocky Mountain Collegian
Rosenburg Library Bulletin
Royal Blue—New York
Rural Life—Rochester, N. Y.
Salem Public Library Bulletin
Scranton Public Library Bulletin
Sister Republics
Southwest Trail—Chicago
Southwestern Stockman
Stallion and Jack News—Kansas City
Stock Farm—Lexington, Ky.
Trenton Free Public Library Bulletin
Troy Topics
Trucker and Farmer—New Orleans
Twentieth Century Farmer—Omaha
Union Labor Bulletin—Fort Collins
University of Illinois Experiment Station Bulletin
University of Illinois School of Education Bulletin
Up to Date Farming—Indianapolis
Vegetable Grower
Veterinarian—Detroit
Wallace Farmer—Des Moines
Weekly Market Growers' Journal—Louisville, Ky.
Western Empire—Los Angeles
Western Poultry Journal—Cedar Rapids, Iowa
Western Poultry World—Denver
W. C. T. U. Messenger—Boulder
Wisconsin Agriculturist—Racine
Wool and Cotton Reporter—Boston
World Wide Farming—Denver
Wyoming Farm Bulletin

COLORADO NEWSPAPERS DONATED TO THE LIBRARY

Alamosa Courier
Alamosa Leader
Antonito Ledger
Arvada Enterprise
Aspen Democrat Times
Ault Advertiser
Austin Journal
Berthoud Bulletin
Bismark Weekly Tribune
Boulder County Miner
Breckenridge—Summit Co.
Brighton Blade
Brighton Register
Bristol Record
Calhan—Divide Farmer
Canon City—Fremont Leader
Carbondale Item
Castle Rock—Record Journal
Chicago Daily Live Stock Record
Colorado Springs—Evening Telegram
Cortez Herald
Craig Empire
Delta County Tribune
Denver—Catholic Register
Denver—Drovers' Telegram
Denver—Highland Chief
Denver—Record Stockman
Dillon—Blue Valley Times
Elbert Co. Tribune

Erie Herald
Evans Courier
Florence Public School News
Fort Collins Courier
Fort Collins Farmer
Fort Collins Morning Express
Fort Collins Review
Fort Lupton Press
Fort Morgan Times
Fruita Independent
Glenwood Post
Grand Junction Daily News
Granada Times
Greeley Republican
Greeley Tribune
Greeley—Weld County Republican
Gunnison News Champion
ypsum Record
Holyoke—State Herald
Hugo—Range Ledger
daho Springs—Clear Creek Miner
ohnstown Breeze
ulesburg News
Kansas City—Drovers' Telegram
Kiowa—Divide Review
Kit Carson Record
a Jara Chronicle
amar Sparks
ittleton Independent
ongmont Weekly Times
oveland Reporter
Manitou Springs Journal
Meeker Herald
Middle Park Times
Milliken Mail
Montrose Press
Ordway Era
Palisade Tribune
Paonia Booster
Penrose Press
Parker Post
Pueblo Chieftain
Pueblo Public Opinion
Pueblo Star Journal
Ridgway Sun
Rifle Reveille
Rocky Ford Enterprise
Rocky Ford Gazette & Topic
Rocky Ford Tribune
Saguache Crescent
Salida Mail
San Juan County Index
Sterling—Republican Advocate
Sterling Democrat
Silt Searchlight
Trinidad Advertiser
Trinidad Chronicle News
Two Buttes Sentinel
Walden New Era
Weldona—Weldon Valley News
Wellington Sun
Windsor—Poudre Valley
Wray Gazette
Wray Rattler

MATHEMATICS

*S. L. MACDONALD	Professor
G. H. GRAVES	Acting Professor
MARGARET DURWARD	Instructor
LILLIAN HUNT	Instructor

The work in mathematics is designed not only to meet the practical needs of the engineer, but also to furnish the curriculum with a strong factor for education and culture. The subject is continuously taught through the freshman and sophomore years.

501.—Solid Geometry—This study is intended for students who have passed the accredited high school with credit for Plane Geometry only. The treatment of lines, planes and angles in space, as a fundamental for Descriptive Geometry, and also the Geometry of the Sphere, as leading to Spherical Trigonometry, are features of the work. Required in Mechanic Arts division. Prerequisite, entrance requirements. Three hours attendance, freshman year, first semester. Text, Wentworth's "Plane and Solid Geometry." Miss Durward

502, 503.—College Algebra and Plane Trigonometry—This course has for its chief interest the solution of equations and of plane triangles, and aims to give not only a working knowledge of these subjects, but a broad theoretical foundation. A thorough course in Elementary Algebra, including curve plotting, is presupposed. The following topics are treated in the order given: Quadratic Equations, Simultaneous Quadratics, Inequalities, Variation, Mathematical Induction, Binomial Theorem, Progressions, Trigonometric Functions, Trigonometric Equations, Limits, Convergence of Infinite Series, Logarithms, Solution of Oblique Triangles, Theory of Equations to Horner's Method. Required in Mechanic Arts and Agricultural divisions, alternative in Home Economics and General Science courses. Five hours attendance, five credits, freshman year, first semester. Texts, Rietz and Crathorne's "College Algebra," and Granville's "Plane Trigonometry." Mr. Graves

504, 505.—Spherical Trigonometry and Analytic Geometry—The following topics are treated in the order given: Solution of Spherical Triangles with applications to Astronomy and Geodesy, Co-ordinates, Fundamental Metrical Formulas, Plane Loci and their Equations, the Straight Line, Standard Equations of the Second Degree, Trigonometric and Exponential Functions, Parametric Representation, Conic Sections and General Equation of the Second Degree, Empirical Equations, Loci in Three Dimensions, the Plane and Straight Line, an Elementary

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*On leave of absence for one year.

Treatment of the Quadric Surfaces and the most important, Space Curves. Required in Mechanic Arts division. Prerequisites, 502, 503. Five hours attendance, five credits, freshman year, second semester. Texts, Granville's "Spherical Trigonometry," and Riggs' "Analytic Geometry." Mr. Graves

506, 507.—Differential and Integral Calculus—The derivative is introduced through the theory of limits and the principal formulas obtained. The geometric interpretation of the derivative and differential is brought in early and followed by applications to plane curves, maxima and minima, and velocities. Next are taken up in the order given: Integration as the inverse of Differentiation, Curvature, the Cycloid and its relatives, the Integral as the Limit of a Sum, Applications of the Calculus to Mechanics, the Law of the Mean, Taylor's Theorem, Partial Differentiation with Applications to the Geometry of Space, Envelopes, Double and Triple Integrals. Required in Mechanic Arts division. Five hours per week throughout the sophomore year, ten credits. Text, Osgood's "Differential and Integral Calculus." Mr. Graves

508.—Astronomy—The aim is to make this subject as purely descriptive as possible, to give the student some knowledge of scientific achievement in astronomy and impart something of the spirit of scientific investigation. Elective. Prerequisite, Elementary Trigonometry. Three hours attendance, three credits, senior year, second semester. Text, Moulton's "Introduction to Astronomy." Mr. Macdonald

MECHANICAL ENGINEERING

J. W. LAWRENCE	Professor
*FRED N. LANGRIDGE	Instructor
ALBERT B. CAMMACK	Instructor
HIRAM PIERCE	Instructor
S. I. ROSS	Instructor
L. D. CRAIN	Instructor

551.—Carpentry and Joinery—Text books and lectures. Study of he cutting edges of various wood-working tools and the means of keepng them in good order; an explanation of the construction of each tool nd its manner of acting on the material; the shrinkage and warping f woods and the different modes of sawing into lumber, and the various orms and uses of framing and other joints. The strength of various imber joints in building construction is considered. Required of stu-

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Resigned.

dents in Mechanic Arts division, first semester, freshman year, one hour attendance, one credit. Text, by Goss. Mr. Pierce

552.—Drawing—This course includes the care and use of instruments and the making of practice drawings. Lettering. Problems in orthographic and isometric projections and the development and intersection of surfaces. Required of students in Mechanic Arts division, first semester, freshman year, eight hours attendance, four credits. Text, by Anthony. Mr. Cammack

553.—Bench Work in Wood—Embraces the manipulation of the tools in their various applications. Students work from drawings. Cases, benches, boxes, foundry flasks, and a variety of other useful articles are made. Required in Agricultural and Mechanic Arts divisions, first or second semester, freshman year, six hours attendance, three credits. Fee, $2.00. Mr. Pierce

554.—Machine Work in Wood—There are given examples of straight turning; cutting in and squaring off; concave, convex, and compound curves; handles for chisels and other tools, and examples in chuck work in separate and combined pieces. Required in the Mechanic Arts division, first semester, freshman year, four hours attendance, two credits. Fee, $1.00. Mr. Crain

555.—Drawing—The sketching of machine parts and the making of working drawings, tracings, and blue prints from these sketches. Required in Mechanic Arts division, second semester, freshman year, four hours attendance, two credits. Prerequisite, 552.
Mr. Cammack

556.—Forge Work—Students are carried through a series of carefully graded exercises in both iron and steel, working from drawings in

Mechanical Engineering Building

each instance. The students are taught how to bend, twist, upset, draw, and weld iron and steel, how to anneal, case harden, temper, braze, etc. Many pieces are made which are put to a practical use. Required in the Agricultural and Mechanic Arts divisions, first or second semester, freshman year, six hours attendance, three credits. Fee, $2.00.
Mr. Ross

557.—Descriptive Geometry—The principles of projection, intersection, development, etc., are discussed and illustrated by a great variety of problems, all of which are accurately worked out on the draughting board by each student. Required in the Mechanic Arts division, second semester, sophomore year. Prerequisite, 555. Five hours attendance, five credits. Text, by Faunce. Mr. Cammack

558.—Boilers—The various forms are carefully studied. Injectors, pumps, condensers, feed-water heaters, and economizers receive special consideration. Chimney draft and mechanical draft are studied and compared with regard to their relative efficiencies. Required in the Mechanical Engineering course, first semester, junior year, three hours attendance, three credits. Text, by Parsons. Mr. Lawrence

559.—Principles of Mechanism—Study of designs for the communication of motion by means of gears, belts, linkage, etc., methods of designing parallel motions, quick return motions, and cone pulleys. The adaptation of the formation of gear teeth of the involute, the epicycloid, the logarithmic spiral and other curves. Elective, junior year, first semester. Prerequisite, Mathematics 503. Three hours attendance, three credits. Text, by Stahl and Woods. Mr. Lawrence

560.—Gas and Oil Engines—Theory and construction of gas and oil engines, igniters, governors, etc. The study of traction and portable gas and oil engines, such as are used in industrial plants, upon contracting work and upon highways and farms. The study of automobile engines. Elective, first semester, senior year. Prerequisite, Chemistry 151, Physics 605. Two hours attendance, two credits. Text, by Jones.
Mr. Cammack

561.—Kinematic Drawing—Required in Mechanical Engineering, two hours attendance, one credit, first semester, junior year. Prerequisites, 555, 503. Mr. Cammack

562.—Foundry—Students are taught how to charge and manage the cupola, brass furnace, and core oven. Castings of iron, brass, and other metals and alloys are made. Required in Mechanical Engineering course, first semester, junior year. Four hours attendance, two credits. Fee, $2.00. Mr. Ross

563.—Pattern-Making—Examples of plain work; core work; pulley work; pipe work; gear work; core boxes, their use and construction, are given. Required in the Mechanical Engineering course, first semester, junior year. Two hours attendance, one credit. Fee, $1.00.
Mr. Crain

564.—Machine Shop Tools—Text book and lectures. The aim is to familiarize the student with up-to-date methods under various conditions of practice and with such machines and appliances as do not come under his immediate observation in our shops. Elective, second semester, junior year. Prerequisite, 503. Two hours attendance, two credits. Text, by Vandervoort. Mr. Cammack

565.—Machine Design—Copying of machinery from good examples; design of riveted joints, elementary machine fastenings, etc. Elective, second semester, junior year. Six hours attendance, three credits. Mr. Cammack

566.—Machine Work in Metal—The care and management of tools and their construction is taught. A five horse power vertical steam engine complete in all details, a number of drafting tables, boring bars, gears, vises, bell chucks, and small tools for use in the shop, serve to illustrate the practical use to which shop products are put. Prerequisites, 553, 554, 562, 556. Required in Mechanical Engineering course, second semester, junior year, ten hours attendance, five credits. Fee, $2.00.
Mr. Cammack

567.—The Steam Engine is studied in its various forms in detail. The department has appliances necessary for complete engine tests. Careful attention is given to the study of valves. The study of traction and portable steam engines, such as are used in industrial plants, upon contracting work and upon highways and farms. Various types of steam turbines are taken up and comparisons made with reciprocating engines. Required in Mechanical Engineering course, first semester, senior year. Three hours attendance, three credits. Text, by Ripper.
Mr. Lawrence

568.—Thermodynamics—A study of the laws of thermodynamics as applied to steam engines, gas engines, air compressors, injectors, and other appliances. Required in Mechanical Engineering course. Prerequisites, 506, 507. Second semester, junior year. Three hours attendance, three credits. Text, by Reeves. Mr. Crain

569.—Transmission of Power—A study of the various forms of power transmission in shops and factories; belt, rope, and chain trans-

mission. Required in Mechanical Engineering course, second semester, junior year. Prerequisite, 503. One hour attendance, one credit.
Mr. Lawrence

570.—Machine Design—The students make designs for screws, bolts, nuts, gears, and complete machines, such as arbor presses, drill presses, lathes, engines, etc. Elective, first semester, senior year, three hours attendance, one and one-half credits. Text, by Reid and Reid.
Mr. Cammack

571.—Specifications and Contracts—Complete working drawings for some particular problem are made, the specifications are made, and a form of contract for such a problem is carefully worked out. Study of the laws governing contracts and specifications. Elective, first semester, senior year, one hour attendance, one credit. Text, by Johnson.
Mr. Lawrence and Mr. Thomas

572.—Seminar—The consideration of articles of interest appearing in the current technical papers and magazines. Required in Mechanical Engineering course, first semester, senior year, one hour attendance, one credit.
Mr. Lawrence

573.—Metallurgy—The study of combustion, fuels, furnaces, and refractory materials, especially the metallurgy of iron and steel. Required in the Mechanical Engineering course. Prerequisite, Chemistry 151. Second semester, senior year, one hour attendance, one credit. Text, by Huntington and McMillan.
Mr. Crain

574.—Machine Shop—Required in Mechanical Engineering course, first semester, senior year. Prerequisite, 566. Six hours attendance, three credits. Fee, $1.00.
Mr. Cammack

575.—Machine Shop—Elective, second semester, senior year. Prerequisite, 566. Four hours attendance, two credits. Fee, $1.00.
Mr. Cammack

576.—Engineering Design—The design and arrangement of power plants, shops, and factories. Required in Mechanical Engineering course. Prerequisite, 570. Second semester, senior year, one hour attendance, one credit.
Mr. Cammack

577.—Railway Mechanical Engineering—The design and construction of locomotives, the operation of the airbrake, and the study of different forms of signals and switches. Elective, second semester, senior year, one hour attendance, one credit. Lectures.
Mr. Lawrence

578.—Heating and Ventilation—The study and design of various forms of heating and ventilation in common use in modern buildings. Required in Mechanical Engineering course. Prerequisite, Chemistry, 151, and Physics 607. Two hours attendance, two credits, second semester, senior year. Text, by J. D. Hoffman. Mr. Lawrence

579.—Steam Engine Design—It is the endeavor to have this work conform to the best modern practice, and to supplement the instruction given, by requiring the student to investigate existing engines with regard to their design and construction. Blue prints of drawings furnished by prominent manufacturers are also used, and show the prevailing forms of engines in use. Elective, second semester, senior year. Prerequisites, 570, 567. Three hours attendance, three credits.
Mr. Crain

580.—Compressed Air Machinery—The study of motors, compressors, hoists, and various air tools. Elective, second semester, senior year. Prerequisite, 567. Two hours attendance, two credits. Text, by Richards. Mr. Lawrence

581.—Seminar—Continuation of 572. Second semester, senior year, one hour attendance, one credit. Mr. Lawrence

582.—Thesis—Each senior is assigned a subject, which he is to investigate and upon which he must write a satisfactory thesis. Second semester, senior year, four hours attendance, two credits.
Mr. Lawrence

583.—Refrigeration and Refrigerating Machinery—The study of methods of producing low temperatures by artificial means, and the study of refrigerating machinery. Elective, second semester, senior year. Prerequisites, 567, 574 and 575, Physics 611. One hour attendance, one credit. Lectures. Text, by Redwood. Mr. Lawrence

584.—Hydraulic Machinery—The study of machinery actuated by water power, and the handling of water by means of pumps, rams, etc. Elective, second semester. Prerequisites, Physics 611, Hydraulics 212. One hour attendance, one credit. Lectures. Text, by Bjorling.
Mr. Lawrence

585.—Mechanical Engineering Laboratory—Investigations of the physical properties of materials of construction entering into buildings, machinery, and other structures; tests and examinations of different kinds of boilers, engines, pumps, etc. Required in Mechanical Engineering course, second semester, senior year. Prerequisites, 567, 574, 575, 611. Six hours attendance, three credits. Mr. Crain

Visits of Inspection—During the senior year the students make visits of inspection to large industrial establishments of the state, in charge of an instructor. These visits are intended to be of educational value and to supplement the work done at the college and to show the students the practical application of many things taught in the classroom. Required in Mechanical Engineering course, second semester, senior year.

MILITARY DEPARTMENT

GEO. L. SCOTT, Major, U. S. A.............Professor

By Act of Congress all Agricultural Colleges are required to teach Military Science and Tactics. Under faculty regulation all male students, except seniors, are required to drill.

The importance of military training, both to the individual and the state, is so important that comment thereon is here unnecessary, further

Officers of Cadet Battalion

than to say that the physical training and development alone are sufficient proof of its benefits. The growing demand for military instruction in connection with school work, and the fact that the State Agricultural College is the only state institution where such a department exists, has led the authorities to make the work as thorough as possible.

For the purpose of instruction, an infantry battalion of three companies, with staff, band and signal corps, has been organized and maintained. Each company has a captain, two lieutenants, five sergeants, and six corporals. The commissioned officers are selected from those in the junior class, and non-commissioned officers from other classes, showing proficiency in the work.

In addition to the above, military instruction covering the same subjects is required and given to the battalion of the School of Agriculture, and to one company at Fort Lewis, Colorado.

The work in the first semester embraces the school of the soldier, company, and battalion in close order. Battalion drills are continued at intervals throughout the year. Extended order drill is taken up in the first semester and continued during the second semester. This includes skirmishes and battle exercises in platoon, company, and battalion; advanced guard, rear guard, and out-post duties. Inspections, battalion parades, guard mounting, and street parades are occasionally given. Inspections are given at such times as to insure the proper care of equipment. All military exercises are performed in accordance with the United States drill regulations of 1911.

The signal corps does practical work in transmitting messages, both by means of signal flag and with heliographs. The systems used are the same as those used in the government service.

Students who are physically unable to take the regular work may be assigned to the signal corps. During unfavorable weather theoretical instruction is given.

The department is equipped with 500 cadet rifles, belts, cartridge boxes, bayonets, and scabbards. National and Battalion colors; swords for officers; signal flags, and heliographs.

BATTALION ROSTER

George L. Scott, Major, U. S. A.	Commandant
C. O. Nuckolls, Cadet Captain	Assistant Instructor and Armorer

Field and Staff

R. F. Herdman	Cadet Major
R. McCann	Adjutant
H. C. Nevius	Sergeant Major
A. White	Sergeant Signal Corps

Band Officers

W. E. Runge	Musical Director	H. O. Strange	Corporal
H. L. Eppstein	Chief Musician	J. Joslin	Corporal
W. E. Edmondson	Drum Major	E. F. McKune	Corporal
L. H. Spahr	Sergeant	A. T. Swanson	Corporal
E. L. Decker	Sergeant	S. A. Smith	Corporal
A. T. Hartford	Sergeant	H. M. Woods	Corporal
W. O. Edmundson	Sergeant	T. McCarty	Corporal
C. Wakeland	Sergeant		

Company "A"

R. Fetz	Captain	C. P. Hopkins	Sergeant
C. Hasty	First Lieutenant	H. C. Graham	Corporal
H. Golden	Second Lieutenant	H. Kobey	Corporal
E. Lighthall	First Sergeant	T. H. Copeland	Corporal
H. Antles	Sergeant	D. Noce	Corporal
L. Connor	Sergeant	L. Doud	Corporal
L. Klinefelter	Sergeant	J. L. Murphy	Corporal

Company "B"

B. Dutton	Captain	T. R. Smith	Sergeant
F. Button	First Lieutenant	T. G. English	Corporal
E. Divelbliss	Second Lieutenant	R. H. Cottrell	Corporal
G. Strock	First Sergeant	H. Williams	Corporal
P. Short	Color Sergeant	H. McCullah	Corporal
L. Osborn	Sergeant	H. Burton	Corporal
M. Allen	Sergeant	W. K. Morrison	Corporal
F. Atkinson	Sergeant		

Company "C"

T. C. Allen	Captain	A. Hennebold	Sergeant
R. L. Sheeley	First Lieutenant	E. C. Knoebel	Corporal
R. E. McKittrick	Second Lieutenant	T. F. Limbocker	Corporal
R. Strong	First Sergeant	G. Mercer	Corporal
J. J. Hammond	Sergeant	T. E. Leiper	Corporal
N. McGrath	Sergeant	C. P. Lamb	Corporal
A. J. Chisholm	Sergeant	R. F. Coffin	Corporal

Dress Parade

PHYSICAL TRAINING

H. W. HUGHES............................Director
MRS. AGNES UPSON...............Assistant Director
(In charge of Physical Training for Women.)

Physical Education for Women.—Physical training is required of every young woman taking college work, except the students of the Musical department, and seniors. The work is given in three one-hour periods each week (one credit) under the leadership of a woman who is a trained specialist in the physical development of women. Gymnasium suits of dark blue flannel, with blouse and full bloomer, and gymnasium shoes, are required. Students are required to wear uniform gymnasium suits which should, under no consideration, be ordered before consulting the director.

Class in Physical Training

The department is conducted upon scientific principles. Its aim is both hygienic and educative. It attempts to aid the normal functioning of the organs of the body, to improve muscular development, to correct abnormalities, and to supply recreation. It aims especially to assist the student toward perfect nervous control and by exercise of precision and skill to train nerve centers and muscles to act quickly and accurately in response to the will. Swedish gymnastics, wands, dumbbells, and Indian clubs are used in the daily program. Particular attention is given to those exercises which will enable the student to acquire erect carriage, and establish accurate movements that the ordinary duties of every day life may be accomplished with a minimum expenditure of energy. To assist in this direction rhythmatical balance movements, military, and figure marching find a place.

The spirit of play is fostered. The students enjoy basketball, volleyball, and tennis, in season. Reasonable effort is made to encourage out-of-door sports, and the director devotes considerable time, when the season is suitable, to out-of-door exercises.

Lectures are given on hygiene, emergencies, physiology of exercise, history and literature of physical education, and allied subjects.

On beginning practical work, a physical examination is given for the purpose of ascertaining the individual needs of each student. No effort is spared to insure that benefit shall always result from the exercises. Students physically unfit at any time for any part of the work are excused from the same during the period of disability. Those thus excused observe the work of the class and are held responsible for acquaintance with the work.

MEMBERS OF ATHLETIC COUNCIL

Ralph Parshall, Chairman
H. W. Hughes Albert B. Cammack
H. Gates, '13 C. Webster, '13

The Department of Athletics is well organized under immediate direction of the Physical Director and comprises work in four lines, football, basketball, track, and baseball, each of which has its separate organization and finance. Each is managed by a student elected by the student body. All business matters pertaining to athletics are considered by the council.

This council is composed of five members, three of which are members of the faculty, and two are students elected by the Athletic Association.

The Wandervoegel

The Agricultural College is a member of the Colorado Athletic Conference. Its athletics are on a very firm basis, free from debt, with all athletic teams well supplied with necessary equipment.

Colorado Field, the new athletic field for men, is located south of Agricultural Hall; the field for women is north.

The field for men consists of a quarter-mile cinder track, with football and baseball fields sodded in blue grass on the inside of the oval, with steel bleachers to seat 1,000 persons. The outside of the oval will contain two practice fields, one for football, and one for baseball. In one corner of the field is located a cement club house, with hot and cold showers, warm rubbing tables, and lockers to accommodate 150 men.

The entire field will be parked with shrubbery and driveways, and will be surrounded by a high wire fence, with shrubbery planted directly on the inside.

The field for women is now under way, and when completed will contain tennis, basketball, and volleyball courts; a field sodded for hockey and other out-of-door games. It will be planned in such a manner that it may be flooded and used for skating during the winter months.

An Exciting Moment in the Game

PHYSICS AND ELECTRICAL ENGINEERING

*F. A. DELAY	Professor
FRED G. PERSON	Acting Professor
F. J. RANKIN	Instructor
FRANK P. GOEDER	Assistant

601.—Household Physics—A course covering mechanics of solids, liquids, gases, heat, magnetism and electricity, sound, and light. The fundamentals of the subject are carefully considered in their relation to the household. Ventilation, heating and lighting, etc., are given careful attention. Required in General Science and Home Economics courses, first semester, freshman year, two hours attendance, two credits. Prerequisite, Algebra, through quadratics. Text, Aldons' "Elements of Physics." Mr. Person

602.—Household Physics Laboratory—Taken with 601 and designed to give the student more intimate acquaintance with the phenomena of daily life by performing the experiments covered by the subject matter of the text. Required in General Science and Home Economics courses, first semester, freshman year, two hours attendance, one credit. Fee, $1.00 Mr. Person

603.—Household Physics—Continuation of 601. Second semester, freshman year, two hours attendance, two credits. Mr. Person

604.—Household Physics Laboratory—Continuation of 602. Second semester, freshman year, two hours attendance, one credit. Fee, $1.00. Mr. Person

605.—General Physics—A course covering mechanics of solids, liquids, gases, heat, magnetism, electricity, sound, and light. A course intended to give general knowledge of the phenomena in the physical world, and to form a basis for the study of all applied sciences. Required in the divisions of Agriculture and Mechanic Arts, first semester, sophomore year, three hours attendance, three credits. Text, by Reed and Guthe. Mr. Person

606.—General Physics Laboratory—Taken with 605. Experimental work designed to give the student first hand knowledge, and to teach him the methods of measurement and ability to handle and manipulate apparatus. Required in the divisions of Agriculture and Mechanic Arts, first semester, sophomore year, four hours attendance, two credits. Fee, $2.00. Mr. Person

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*On leave of absence.

607.—General Physics—Continuation of 605. Sophomore year, second semester, three hours attendance, three credits.
Mr. Person

608.—General Physical Laboratory—Continuation of 606. Sophomore year, second semester, four hours attendance, two credits. Fee, $2.00.
Mr. Person

609.—Alternating and Direct Current Machinery—A general course of lectures and recitations. Study of elements of electricity; construction and operation of alternating and direct current dynamos and motors. For non-electrical engineering students. Required of civil and mechanical engineering students, first semester, senior year, three hours attendance, three credits. Text, "Dynamos and Motors," Franklin and Esty.
Mr. Person

610.—Laboratory Course for 609—Required of mechanical engineering students, first semester, senior year, four hours attendance, two credits. Text, Franklin & Esty's "Laboratory Manual." Fee, $2.00.
Mr. Rankin

611.—Electrical Measurements—A study of the units of measurements involved in electrostatic and electromagnetic phenomena. Required in Electrical Engineering course, first semester, junior year, three hours attendance, three credits. Text, Franklin & McNutt.
Mr. Person

612.—Electrical Measurements Laboratory—Taken with 611. Required in Electrical Engineering course, first semester, junior year, four hours attendance, two credits. Fee, $1.00.
Mr. Rankin

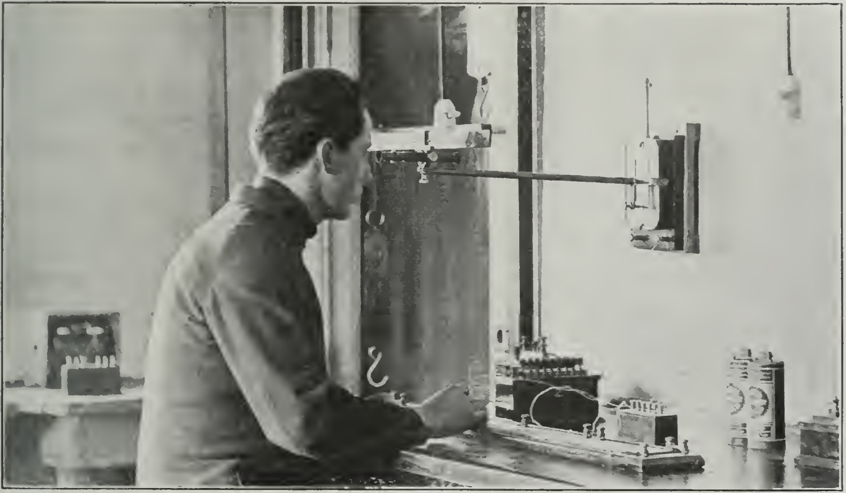
613.—Direct Current Machinery—The construction and operation of direct current apparatus and machinery. Required in junior year,

Physics and Electrical Engineering Building first semester, two hours attendance, two credits. Text, "Elements of Electrical Engineering," Vol. I, by Franklin & Esty.

Mr. Rankin

613A.—Direct Current Machinery—Continuation of 613. Second semester, three hours attendance, three credits. Mr. Rankin

614.—Direct Current Machinery Laboratory—Taken with 613A. Required in Electrical Engineering course, second semester, junior year, ten hours attendance, five credits. Text, "Testing Electro Magnetic Machinery," Swenson & Frankenfield. Fee, $3.00. Mr. Rankin



Measuring the Resistance of a Conductor

615.—Electric Lighting and Photometry—A course in distributing systems and lamps. Measurement of candle power. Elective, three hours attendance, three credits, second semester, junior year. Text, "Electric Lighting," by Francis B. Crocker, Vol. II.

Mr. Rankin

616.—Telephone, Telegraph, Railway Signals, Fire Alarms—Lectures and recitations. A study of the theory and practice of telephone and telegraph work. Elective, senior year, first semester, two hours attendance, two credits. Text, "American Telephone Practice," by Kempster B. Miller.

617.—Laboratory for 616—Elective, senior year, first semester, four hours attendance, two credits. Mr. Rankin

618.—Alternating Current Machinery—Required in Electrical Engineering course, first semester, senior year, five hours attendance, five credits. Text, "Elements of Electrical Engineering," Vol. II, by Franklin & Esty. Mr. Rankin

619.—Laboratory for 618—Required in the Electrical Engineering course, senior year, first semester, ten hours attendance, five credits. Fee, $3.00. Mr. Rankin

620.—Continuation of 618—Required in Electrical Engineering course, second semester, senior year, two hours attendance, two credits. Mr. Rankin

621.—Continuation of 619—Required in Electrical Engineering course, second semester, senior year, ten hours attendance, five credits. Fee, $3.00. Mr. Rankin

622.—Street Railways—Lectures, recitations, and practical tests on street railway system. Both alternating and direct current railways are studied. Prerequisite, 613. Elective, senior year, first semester, three hours attendance, three credits. Text, "American Street Railway," by Herrick & Boynton. Mr. Rankin

623.—Design of Electrical Machinery and Apparatus—Lectures, recitations and drawing. A course in the design of lifting magnets, direct current dynamos and motors, transformers, alternating current generators, and induction motors. Prerequisite, 613. Elective, first semester, senior year, six hours attendance, three credits. Mr. Rankin

624.—A continuation of 623—Elective, senior year, second semester, four hours attendance, two credits. Mr. Rankin

625.—Seminar—Discussion of current engineering topics as treated in the engineering magazines. Elective, first semester, senior year, one hour attendance, one credit. Mr. Rankin

626.—Seminar—A continuation of 625. Required, second semester, senior year, one hour attendance, one credit. Mr. Rankin

627.—Hydro-Electric Machinery—Elective, second semester, senior year, two hours attendance, two credits. Mr. Rankin

628.—Commercial Electrical Engineering—A course devoted to costs of materials, construction, and in general, the commercial side of electrical engineering. Elective, senior year, second semester, one hour attendance, one credit.

629-630.—Thesis—An original investigation of some electrical engineering subject. Elective, three credits, each semester.

Mr. Rankin

631.—Applied Mechanics—This course, consisting of lectures and recitation, will cover the practical applications as well as the theoretical side of forces in action in the general field of mechanics. Numerous problems illustrating the different cases will be used. Prerequisites, college algebra, trigonometry, calculus. Required, sophomore year, second semester, three hours attendance, three credits.

Mr. Person

632.—Electrical Power Transmission—Prerequisite, course 618. Required, senior year, second semester, two hours attendance, two credits.

Mr. Rankin

RURAL AND INDUSTRIAL EDUCATION

CHAS. A. LORY........................Acting Professor
C. G. SARGENT...................Rural School Visitor

Committee on Rural and Industrial Education

S. ARTHUR JOHNSON, Chairman
B. F. COEN T. M. NETHERTON

The Department of Rural and Industrial Education as at present organized is conducting extension work only. The Department was organized by order of the Executive Committee of the State Board of Agriculture in the summer of 1912, and Mr. Sargent began his work in October. Previous to the organization of the Department, a great deal of work in cooperation with the rural schools was carried on under the direction of the Committee on Rural and Industrial Education.

Rural School Visitor.—The Rural School Visitor is making a survey of the rural and industrial education facilities of the State. He is cooperating with the county superintendents in the introduction of Agriculture, Mechanic and Household Arts into some of the stronger rural schools, and in improving the conditions of the rural schools generally. Where conditions are favorable, he is cooperating with county superintendents in the work of organizing consolidated districts

Special Instruction and Assistance.—Special instruction is offered in the Summer Normal Institutes in Agriculture and in Household Arts, and direct assistance through correspondence and personal visitation is given to schools that are enlarging their curriculum to include more vocational training.

Plans and Lesson Outlines.—Plans and blue prints of buildings and equipment are furnished on application, and assistance is given in the preparation of courses of study. Outlines of a series of lessons in Household Arts and in Agriculture have been prepared and furnished to the rural teachers of the State. A package library relating to the teaching vocational subjects especially Agriculture, Household Arts, and Mechanic Arts, and to the great problem of rural school improvement has been prepared by the library and is lent to teachers and to school officers upon application.

Correspondence.—Correspondence with any one interested in the betterment of our rural schools and in courses in Agriculture, Household Arts, and Mechanic Arts in our high schools, is solicited.

VETERINARY MEDICINE

GEORGE H. GLOVER..........................
Head of Division, Professor Theory and Practice
I. E. NEWSOM................Professor of Pathology
HARRY E. KINGMAN...........Professor of Surgery
C. L. BARNES............Professor of Materia Medica
A. W. WHITEHOUSE...........Professor of Anatomy

650.—Anatomy—This subject is given in two-hour periods in the laboratory. Devoted to the study of the skeleton of the horse and its articulations. Ten hours attendance, five credits, first semester, freshman year. Fee, $2.50. Mr. Whitehouse

651.—Anatomy—A study of the gross structures of the horse, including muscles, tendons, articulations, thoracic, and abdominal viscera. Ten hours attendance, five credits, second semester, freshman year. Fee, $2.50. Mr. Whitehouse

652.—Anatomy—A study of the vascular and nervous systems and detailed dissection of viscera. Five hours attendance, two and one-half credits, first semester, sophomore year. Fee, $2.50.
Mr. Whitehouse

653.—Anatomy—Complete dissections of the ox, sheep, dog, and such other comparative dissections as time will permit. Ten hours attendance, five credits, second semester, sophomore year. Fee, $2.50.
Mr. Whitehouse

654.—Surgical Anatomy—Regional dissection with a view to operative surgery. Five hours attendance, two and one-half credits, first semester, junior year. Fee, $2.50. Text, Sisson's "Veterinary Anatomy."
Mr. Whitehouse

655.—Histology—A study of the minute structure of normal tissue. Four hours attendance, four credits, first semester, sophomore year. Text, Bailey's "Histology."
Mr. Newsom

656.—Histology Laboratory—Preparing, staining, and mounting of specimens for microscopic study. Six hours attendance, three credits, first semester, sophomore year. Fee, $2.50.
Mr. Newsom

660.—Physiology—A study of the functions of normal tissues and organs of the animal body; general, special, and comparative physiology. Four hours attendance, four credits, second semester, freshman year. Text, Fred Smith's "Manual of Veterinary Physiology."
Mr. Whitehouse

661.—Physiology—Continuation of 660. Two hours attendance, two credits, first semester, sophomore year. Text same as for 660.
Mr. Whitehouse

662.—Physiology—Continuation of 661. Two hours attendance, two credits, second semester, sophomore year.
Mr. Whitehouse

663.—Physiology Laboratory—Experiments in circulation, digestion, respiratory movements, locomotion, etc. Two hours attendance, one credit, second semester, sophomore year.
Mr. Whitehouse

664.—Materia Medica—The derivation, physical, and chemical properties, physiological actions, dosage, preparation, and administration of drugs. Four hours attendance, four credits, second semester, sophomore year. Text, Winslow's "Materia Medica."
Mr. Barnes

665.—Pharmacy Laboratory—The preparation of tinctures, fluid extracts, official ointments, liniments, etc. Four hours attendance, two credits, second semester, sophomore year. Fee, $2.50.
Mr. Barnes

666.—Materia Medica—Continuation of 664. Two hours attendance, two credits, first semester, junior year. Mr. Barnes

667.—Toxicology—Poisons and statistics on poisons; bacterial poisons; forage poisoning; poisonous plants, etc. One hour attendance, one-half credit, one-half first semester, senior year. Mr. Glover

668.—Therapeutics—A consideration of the use of remedial agents in the treatment of disease. Two hours attendance, two credits, first semester, senior year. Prerequisites, 664, 666. Mr. Kingman

669.—Therapeutics—Continuation of 668. Two hours attendance, two credits, second semester, senior year. Mr. Kingman

670.—Parasitology—A study of parasites affecting the domesticated animals, and means of control and eradication. Two hours attendance, two credits, second semester, sophomore year. Text, Kaupp's "Animal Parasites and Parasitic Diseases." Mr. Newsom

671.—Parasitology Laboratory—A macroscopical and microscopical study of animal parasites. Two hours attendance, one-half credit, one-half second semester, sophomore year. Mr. Newsom

672.—Pathology—A study of the structural tissue changes due to disease. Three hours attendance, three credits, first semester, junior year. Text, Kingsley's "Veterinary Pathology." Mr. Newsom

Compounding Medicines in the Pharmacy Laboratory

673.—Pathology Laboratory—A study of gross and microscopic structure of diseased tissues. The research work in connection with the Experiment Station is of special value to the student. Six hours attendance, three credits, first semester, junior year. Fee, $2.50.
Mr. Newsom

674.—Bacteriology—A study of bacteria and protozoa, and their relation to diseases of animals. Three hours attendance, three credits, second semester, junior year. Text, Buchanan's "Veterinary Bacteriology."
Mr. Newsom

675.—Bacteriology Laboratory—The cultural and microscopic study of various bacteria mentioned in the text. Ten hours attendance, two and one-half credits, one-half second semester. Required of juniors in Veterinary Medicine and Home Economics, and seniors in Animal Husbandry and Horticulture. Text, Saunders' "Atlas of Bacteriology." Fee, $2.50.
Mr. Newsom

676.—Meat Inspection—A study of the gross lesions of disease in food producing animals; local and federal laws governing inspection and general principles which should guide the meat inspector. Three hours attendance, three credits, first semester, senior year. Text, Edelman's "Meat Inspection." Prerequisites, 672 and 673.
Mr. Newsom

677.—Autopsy—Required of senior students in either semester whenever material is available. One-half credit.
Mr. Newsom

678.—Laboratory Diagnosis—Diagnosis of disease by examination of body fluids, microscopic examination of tissue, and experimental innoculations. Ten hours attendance, two and one-half credits, one-half second semester, senior year. Fee, $2.50.
Mr. Newsom

679.—General Bacteriology—A study of the morphology and varied phenomena exhibited by bacteria in general, with special reference to those organisms associated with the manufacture and preparation of foods; the bacteria of the soil, and bacterial diseases of plants and animals. Required of seniors in Animal Husbandry, Entomology, Agronomy, Horticulture, and juniors in Home Economics. Two hours attendance, two credits, second semester. Text, Marshall's "Microbiology for Agricultural and Domestic Science Students."
Mr. Newsom

680.—Dentistry—Dentition of domesticated animals. The care, examination, extraction, and other operations on the teeth. One hour attendance, one credit, second semester, freshman year.
Mr. Barnes

681.—Surgical Restraint—Practical instruction in casting and restraining animals. Two hours attendance, one credit, second semester, freshman year. Mr. Kingman

682.—Surgery—General surgery; consideration of the causes, course, symptoms, and treatment of surgical diseases of the domestic animals. Two hours attendance, two credits, first semester, junior year. Text, Moller's "Veterinary Operative Surgery."

Mr. Kingman

683.—Surgery—Continuation of 682. Two hours attendance, two credits, second semester, junior year. Mr. Kingman

684.—Lameness—The causes of lameness, art of diagnosis, and treatment. Three hours attendance, three credits, second semester, junior year. Prerequisites, 650, 651, 652, 653, 654. Text, "Wyman on Lameness." Mr. Kingman

685.—Operative Surgery—Consideration of operative technique for specific operations. Taught by lectures and demonstrations. Two hours attendance, two credits, first semester, senior year. Prerequisites, 682 and 683. Mr. Kingman

686.—Obstetrics—The diseases incident to reproduction, their causes, prevention, and treatment, supplemented by demonstrations in

Meat Inspection in Local Market

the clinic. Prerequisites, 650, 651, 652, 653, 672. Four hours attendance, four credits, first semester, senior year. Text, Williams' "Obstetrics." Mr. Kingman

687.—Surgical Exercises—Practice in surgical technique. Taken any time during the senior year when material is available. One credit. Fee, $2.00. Mr. Kingman

688.—Shoeing—A study of the anatomy and physiology of the normal foot of the horse; factors that influence the form of the hoof, preparation of the normal hoof for shoeing, and shoeing to correct faulty gait. Pathological shoeing. One hour attendance, one credit, second semester, senior year. Mr. Barnes

689.—Soundness—Practical examinations of the horse, soundness, and fitness for special service. One hour attendance, one credit, second semester, senior year. Mr. Barnes

690.—Clinic—Practice in the physical examination of animals, bandaging, the application and administration of medicinal agents. Two hours attendance, one credit, first semester, freshman year. Mr. Kingman

691.—Clinic—Continuation of 690. Two hours attendance, one credit, second semester, freshman year. Mr. Kingman

692.—Clinic—Sophomore clinic consists of lectures upon animals under treatment. The ambulatory clinic affords an opportunity for the student to become acquainted with the problems of actual practice. Five hours attendance, two and one-half credits, second semester, sophomore year. Mr. Kingman

693.—Clinic—Junior students are expected to assist the seniors in their hospital and clinical work, which consists, among other things, in making daily examinations of cases, and assisting in the dressing of wounds, and treatment of all cases in the hospital. Five hours attendance, two and one-half credits, first semester, junior year. Mr. Kingman

694.—Clinic—Continuation of 693. Five hours attendance, two and one-half credits, second semester, junior year. Mr. Kingman

695.—Clinic—Seniors are given preference in the ambulatory clinic and in assisting with operations, diagnosis, and treatment of all cases in the hospital. Five hours attendance, two and one-half credits, first semester, senior year. Mr. Kingman

696.—Clinic—Continuation of 695. Five hours attendance, two and one-half credits, second semester, senior year. Mr. Kingman

697.—Theory and Practice—Diseases of a sporadic nature are first considered, including diseases incident to the respiratory, digestive, circulatory systems, etc. Living animals are utilized as far as possible in practical demonstration of various diseases, as are also specimens from the pathology museum. Four hours attendance, four credits, first semester, junior year. Text, Hutyra & Marek's "Pathology and Therapeutics of the Diseases of Domestic Animals." Mr. Glover

698.—Theory and Practice—Continuation of 697. Three hours attendance, three credits, second semester, junior year. Text same as 697. Mr. Glover

699.—Theory and Practice—Deals principally with infectious diseases; acute infectious exanthematic diseases; acute infectious diseases with localization of certain organs; infectious diseases with special involvement of the nervous system; chronic infectious diseases. Four hours attendance, four credits, first semester, senior year. Text, same as 697. Mr. Glover

700.—Theory and Practice—Continuation of 699, and infectious diseases produced by protozoa. Five hours attendance, five credits, second semester, senior year. Text, same as for 697. Mr. Glover

701.—Control of Infectious Diseases—A study of the methods by which infectious diseases of animals may be controlled and eradicated. Two hours attendance, two credits, second semester, senior year. Mr. Newsom

702.—Dairy Inspection—This subject embraces the sanitary handling of milk, use of the score card, diseases of dairy cows, adulteration of milk, effect of improper food on the dairy cow and her products, the tuberculin test, etc. One hour attendance, one credit, second semester, senior year. Mr. Glover

703.—Diseases of Livestock—This subject is devoted to a practical consideration of common accidents and ailments on the farm; the care of animals in health and nursing in disease. Elective in the Agricultural Division, three hours attendance, three credits, first semester, junior year. Mr. Barnes

704.—Veterinary Elements—The care and management of live stock on the farm; the recognition of diseases and caring for sick animals. Two hours attendance, two credits, first semester, senior year. Required in Animal Husbandry course. Text, Reynolds' "Veterinary Studies for Agricultural Students." Mr. Barnes

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CONSERVATORY OF MUSIC

ALEXANDER EMSLIE. Director Conservatory of Music Voice Culture, Opera, Oratorio, and Chorus Director.
HOWARD S. REYNOLDS...Director Violin Department, and Instructor in Violin, Harmony, Counterpoint, and Composition
MRS. ALEXANDER EMSLIE........................ Directress Piano Department, and Instructor in Piano
MISS LULU GRIFFITHS............Assistant in Piano
MISS CHARLOTTE RIST...Instructor in Public School Music
MISS IRENE DOUGLAS..................Accompanist
BENNET W. FOLTZ..............Instructor in Cornet
RAY BAXTER.................Instructor in Trombone
W. E. RUNGE..................Instructor in Clarinet

The Conservatory of Music furnishes carefully prepared courses of study in each of the various branches taught, commencing with the most elementary in each specific branch and carrying its students through to the last stages of a finished musical education. Musical education in the West has steadily advanced so that it is now conceded that the advantages are greater at home than in the East.

Voice Culture.—In this department careful attention is given to the following: Correct tone placement, breathing, diction, phrasing, interpretation, style, etc. In the main oral exercises are used, as it has been demonstrated over and over again that this method of teaching has produced the best results.

Oratorios and Cantatas.—The study of oratorios should be undertaken only by the most advanced pupils. The highest ambition of a singer should be to achieve distinction in this line of work. The following oratorios and cantatas may be studied: Handel's Messiah, Samson, Judas Maccabeus, and Jeptha; Mendelssohn's Elijah, St. Paul, Athalie, and Hymn of Praise; Haydn's Creation, Seasons, etc. A competent accompanist will be furnished at lessons in oratorio, free of charge.

School of Oratorio and Acting.—Opera, like oratorios, should be studied by advanced pupils. No singer can be fully equipped without being able to sing at least three operas. It brings to the voice a quality of tone which cannot be obtained from any other study of music. Pupils desirous of studying the art of acting in connection with the opera can do so, although it is not compulsory. The study of acting is offered so far as it relates to operatic rendition in order to give the pupils a graceful bearing on the stage or platform. As is well known, a singer's success is largely due to his or her personal appearance in opera, oratorio or concert singing.

Voice Training for Children.—This training is given in classes and is invaluable to children. Much of the purity, beauty, and ease of tone in speech and song of the adult depends upon the care and guidance of the voice in childhood. Proper vocal exercises are given to develop a perfectly healthy throat—stress is laid upon the extreme delicacy of the vocal organs and the great danger of straining them by too loud singing, talking or laughing. There would be fewer harsh, metallic, nasal, guttural voices if parents could but realize the importance of such care.

Pianoforte.—It is a universally conceded fact that the study of pianoforte is and will continue to be a very essential part of a musical education. Considering the great advance made in this line of work during the last decade, a course of training which answered the needs of pupils a few years ago is entirely inadequate to present demands. While the outlined course is not obligatory, it will be used to meet the individual requirement. Special attention is given to musical touch, interpretation, ear training, musical analysis, rhythm, sight reading, and musical thinking. The famous Leschetizky, also the Mason touch and technique are employed in fundamental work.

Children's Work.—This work is given both privately and in class. The private work consists of the study of melody, rhythm, technique,

Conservatory of Music

and sight reading. Formed into classes the pupils are taught by means of symbols. Interesting games make tedious drills subjects of pleasure; stories and songs stimulate ideas and musical intelligence. Mental drills are used to awaken musical thought; the eye is trained to read quickly and correctly musical notation. The muscles of the fingers, wrist, and arm are developed and strengthened by finger gymnastics and table technique, performed to the rhythm of delightful little songs. The sense of rhythm is developed by rhythmic exercises and songs. Marches and drills cultivate correct ideas of time. Pictures and verses teach of the great composers. Piano work illustrates the principles taught by games and exercises.

Demonstrations will be given occasionally to show parents and friends the results accomplished in this line of work.

Harmony, Counterpoint, and Musical History.—The study of Harmony proper begins with the consideration of the Triad. Following this comes the rules for connecting Triads; the inversion of Triads; consecutive unisons, fifths and octaves; chords of the seventh and their inversions; cadences; Italian, German, French, and Neapolitan sixth chords; chords of the ninth, eleventh and thirteenth; modulations; suspensions and retardations; open harmony, and score writing. Following this Elementary Harmony comes a course of Counterpoint. This study must be directed in accordance with the needs of each individual pupil.

The course in the history of music consists of text book and lectures on the development of music from early times to the present. This course is invaluable for a greater knowledge of either vocal or piano music.

Public School Music.—This course is designed for the training of supervisors of music in public schools. There is an incessant demand from all parts of the country for capable teachers especially qualified to supervise and teach music in the public schools. Such knowledge can only be obtained under the guidance of a teacher who has by personal experience familiarized himself with the peculiar demands of this line of work. The conservatory offers a thorough course in this line of study. Instruction is given both privately and in class. Those wishing to take the full course in one year are required to take four class lessons a week.

Sight Singing and Reading.—The work of this course consists in presenting the melodic and rhythmic elements of music with special reference to notation and its relation to music thinking and music reading. It seeks systematically to develop the ability to translate quickly the written symbols of music into melody and song, and aims especially to prepare for acceptable chorus choir work, as well as to lay foundation work for all music thinking.

Students' Recitals.—Recitals are given at intervals during the season. These recitals are a part of the regular work of the conservatory and are designed to give frequent opportunity to come before audiences. All students are therefore expected to take their turn when chosen and receive help and suggestions from the respective teachers. Parents and friends are welcome at these recitals.

Free Advantages and Privileges.—A large chorus will be formed for the purpose of rehearsing the choruses from the oratorios and operas. Those competent and who are willing to attend rehearsals regularly will be admitted free of charge. Ladies' and gentlemen's glee clubs will also be organized and will meet twice a week for practice. Only those students having good voices and who are good readers of music will be entitled to membership in these clubs.

Library.—The conservatory has over two thousand copies of music, by the best composers, all nicely bound and classified. Consequently it is able to rent to the students at a nominal price such music as will meet the demands of an entire course. Students desirous of buying their own music will be at liberty to do so.

TUITION

Fall Term of Fourteen Weeks

(For other terms, prices proportionate)

Vocal Lessons:	Mr. Emslie	
	Two lessons per week, twenty minutes	$28.00
	One lesson per week, thirty minutes	$21.00
	Miss Rist	
	Public School music, two lessons per week of forty minutes, in class	$14.00
	Private lessons, thirty minutes, two per week	$21.00
Piano Lessons:	Mrs. Emslie	
	Private lessons, thirty minutes, two per week	$21.00
	One lesson per week, thirty minutes	$14.00
Violin Lessons:	Mr. Reynolds	
	Two lessons per week, thirty minutes	$28.00
	One lesson per week, thirty minutes	$14.00
Harmony, Analysis:		
	In class	$12.00
History, Ear Training:		
	In class	$8.50
Music Rent		$1.50

Rules and Regulations.—Tuition is payable strictly in advance and the conservatory is in no way responsible for lessons lost through absence or tardiness of the pupils. Students entering after the opening of the term will be charged only from the date of entering. No reduction made for temporary absence of pupils or for lessons discontinued. Students leaving during the term will therefore not be entitled to have any money refunded; only in case of protracted illness will an exception be made in the above stated regulations.

Students pursuing any of the regular courses of study will be permitted to arrange for such instruction in music as in the judgment of the faculty will not interfere with their college work. Students in Home Economics and General Science courses are allowed five credits in music in the requirements for graduation. Students of the conservatory may take up such work in the College and in the School of Agriculture as they are qualified for. The requirements for registration are the same as for regular students.

Students in the conservatory, not graduates of high schools, may, upon recommendation of the director of the conservatory and of the professor of modern languages, take up work in French, German or Spanish.

Further information sent on request.

College Organizations

LITERARY SOCIETIES

The exercises of the forum and reading table give the student a wider horizon, a widening consciousness of his own powers, and an ease in both conversation and public address.

"The Philo-Athenaeum Society" meets in the lecture room of Guggenheim Hall. "The object of this society is to encourage free investigation and promote growth in literary composition, and readiness and fluency of speech."

"The Columbian Literary Society" meets in Horticultural Hall. "This society is organized to train its members in literary work, to instruct them in parliamentary law, and to promote their growth in general knowledge."

Its membership is composed of students of all courses in regular college work. Diplomas are granted to those who faithfully perform their work.

"The Owl Debating Society" meets on Wednesday evenings in the west mathematics classroom. "The purpose of the society is to increase the proficiency of its members in the art of public speaking." All male students of good standing in the college are eligible for membership.

TECHNICAL SOCIETIES

"The Home Economics Club" meets twice a month to discuss events and activities along home economic lines. The club was organized in October, 1909.

"The Agricultural Club" is a scientific society organized and maintained by the students of the Agricultural division. Meetings are held each Monday evening in Horticultural Hall. At these meetings subjects are discussed relating to the farm, orchard, garden, and experiment stations. Occasionally talks are given by the faculty and other lecturers. Students of good standing receive diplomas from the society upon graduation from the college.

"Engineering Society."—With "The encouragement of original research, the dissemination of these results among its members; and the cultivation of a spirit of mutual assistance in the practice of the profession of engineering" as an object, the Engineering Society of C. A. C. was organized in the fall of 1902. The membership is composed of all students who are pursuing courses in engineering. Many talks of practical worth are given by the professors and engineering students at the meetings which are held every Monday evening in the Electrical Engineering building.

"Agricultural College Branch American Institute of Electrical Engineers."—The students of the Electrical Engineering department have formed a Student Branch of the American Institute of Electrical Engineers. The proceedings of the American Institute of Electrical Engineers are read and discussed, and original papers are presented to the society by the students and the faculty members. All electrical engineering students are eligible for membership.

"The Veterinary Medical Association" was organized in the beginning of the fall term, 1907. This association is composed of veterinary students and college professors, and is devoted to the study of scientific problems along veterinary lines, and to the promotion of the social interests of the Veterinary department. The association meets each Monday evening at seven o'clock in the Pathology building on Laurel street. Graduates of the Veterinary department are granted diplomas from this association only upon the condition that they have faithfully performed seventy per cent of the work required of them. Every student is expected to read at least two original papers on veterinary subjects each term.

ATHLETIC ASSOCIATION

Officers 1912-1913

HERBERT GATES.........................President
CHARLES WEBSTER.....................Secretary

This association has for its object the promotion of collegiate and intercollegiate athletics. All students are eligible for membership, the only requirement being to sign the constitution of the association. The president and secretary are ex-officio members of the Athletic Council, which is made up of three members of the faculty and the two students named. This council directs the general athletic work of the institution.

When a student becomes a member of the association, three dollars of his entrance fee go to the association treasury; and by a unanimous vote of the associated students, a motion was carried asking the college registrar to collect $4.00 from each student upon registration, to pay for a season ticket to all athletic contests excepting the annual athletic smokeless smoker.

The association stands for true sportsmanship and fair dealing, and a strict observance both in letter and in spirit of the agreements of the Rocky Mountain Faculty Athletic Conference.

THE ASSOCIATED STUDENTS

Officers for 1912-1913

LESTER COINER...........................President
GLENN RAY.....................Secretary-Treasurer

The "Associated Students" was organized in the fall of 1908. Its object is to promote college spirit, to bring the students into closer fellowship, and to discuss and act upon all matters pertaining to the welfare of the student body and hence our institution. Its value has been shown by the enthusiasm with which the students discuss the questions brought before them, and the accuracy of the final conclusions upon these questions of general interest. Its membership includes all "college students." The officers are chosen one from each class and one from the ladies in general.

MUSICAL ORGANIZATIONS

The Military Band of thirty pieces is an important adjunct to the cadet battalion. This organization receives daily instruction by a competent band master, throughout the college year, and ranks among the best concert bands of the state. The college band takes part in all local parades, military and civil, renders monthly concerts in the chapel during the second semester, and takes part in the program of commencement week. The band is subject to the call of the president for special occasions that may occur from time to time.

Prize Winners at Festival of Mountain and Plain

A Glee Club, Male Quartet, and Ladies' Glee Club, under the care of the director of the conservatory, add much to the strong musical combination of the school. These organizations present rare opportunities for musical culture, which should assume an important part in a collegiate education.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION

Officers, 1912-1913

A. B. RICHARDSON	President
J. A. LUNN	Recording Secretary
F. P. GOEDER	Treasurer
B. M. OLIVER	General Secretary

Object.—The Young Men's Christian Association stands for the highest ideals in college life. Habits formed during college life are seldom broken after graduation. Each year the Colorado Agricultural College sends forth men to positions of responsibility throughout our country. The association has its existence in the belief that the most effective living is based on the principles exemplified in the life and teachings of Jesus Christ. To bring young men into vital contact with the influence of that life is the fundamental purpose of the association's activities.

Social Activities.—The association serves the student in practical ways. If possible, it gets in touch with him even before he leaves home for Fort Collins. Upon arrival, he is met by members of the New Student Committee. A friendly greeting and an offer of assistance help to break the spell of strangeness and make the new man feel at home in his new surroundings. Rooms are located, boarding places found, assistance given in regard to studies—in fact, everything possible of real service to a new man.

During the first week of school, a "Stag" social is held which brings all the men together for a social time and broadens acquaintance and promotes good fellowship. Various social affairs occur throughout the year in connection with the Young Women's Christian Association.

Employment.—Among the most helpful features of the association is its Employment Department. No fee is charged. Any student desiring to earn all or a part of his expenses is welcome to avail himself of help of this department. During the past year, students were enabled by this means to earn more than two thousand five hundred dollars.

Religious Activities.—The religious work of the association includes Bible and mission study courses, arranged especially for college men. These classes meet each week in the rooms of the men, in the Y. M. C. A. rooms, in the fraternity houses, or in connection with the Sunday schools. The fellowship in these small groups with other young men who are fighting life's battles, is of great value to the young man. Weekly religious meetings are held in Horticultural Hall. Young men are helped to form and hold to their high standards of Christian manhood.

Information.—The General Secretary is the employed officer of the association and gives all his time to the work. He desires to be of service in every way possible. Feel free to write him for any desired information.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION

Officers, 1913-1914

AUREL LUCE	President
WINIFRED MATTOON	Vice-President
EVA ALLEN	Recording Secretary
MYRA CHACE	Treasurer
MATTIE RICHARDSON	Corresponding Secretary

The Young Women's Christian Association has had a place in this college since 1892. It is a part of the National Young Women's Christian Association, and of the world's organization, and its members feel the broadening effect of this union in spirit with the student women of the world.

Its purpose is to develop, during college days, by intercourse with strong Christian women from all the various churches, the vital religious life which finds its expression in service.

During the opening week of the college year, the association girls meet the new girls at the trains, and give them welcome, and such assistance as they may need in finding the rooms recommended to each from the list of desirable homes filed with the Dean of Women. On Sunday, they are introduced to the church of their preference by the girls of their own denomination, and as the weeks go by, the new girls are helped, guided, and befriended. The association continues its social service during the year in sending flowers to the sick, providing wholesome fun in social afternoons or evenings at the college, furnishing a Rest Room, for women, in Guggenheim Hall, and in such other ways as are from time to time possible.

Bible and mission study classes are provided, and regular midweek devotional services extend further opportunities for religious growth during college days.

COLLEGE PUBLICATIONS

In order that the editors, assistants, and business managers of student publications may receive the maximum training this work affords, the faculty committee on Student Publications, lends its assistance whenever it is needed. Under certain conditions, the editor-in-chief of the Collegian may receive each semester, two credits toward graduation, for work done as editor. Under similar conditions the editor-in-chief of the Silver Spruce may receive two credits the second semester.

The Rocky Mountain Collegian is a weekly publication put out by the student body, and it is the official publication of that body. It has as its aim the representation, in their true light, of the sentiments of the student body.

The officers are elected in the spring of each year to serve for the following year. The officers thus elected have full control of all matters pertaining to its publication.

Staff for Current Year

WALDO H. JOHNSON	Editor-in-Chief
A. B. RICHARDSON	Business Manager
RAYMOND JACKSON	Local Editor
CARMEN BUTTERWORTH	Society Editor
ANNABEL ANDERSON	Literary Editor
CHARLES WEBSTER	Athletic Editor
G. C. HYMER	Exchange Editor
PROF. PARSHALL	Alumni Editor

The Silver Spruce is a volume published annually by the junior class. It is a neatly printed, well bound book of two hundred or more pages. Its purpose is to give an accurate review of the school year in its every respect.

Staff for Current Year

BERT E. DUTTON	Editor-in-Chief
DORSEY F. RICHARDSON	Associate Editor
FOREST E. BUTTON	Business Manager
ROSS L. SHEELEY	Advertising Manager
HAYES WILLIAMS	Photographer
HOMER G. GOLDEN	Artist
MARTHA TOWNSEND	Literary Editor
HELEN MARKS	Society Editor
ELWOOD NYE	Humorist

News Notes.—This is a weekly publication of seasonable articles on Agriculture, Home Economics, and Engineering subjects, prepared by members of the faculty, and sent by the Division of Agricultural Extension Work to the press of the state, and to about one thousand prominent farm and stock journals throughout the country.

Division of Agricultural Extension

C. H. HINMAN........................Superintendent

The Extension Divison is the means by which the results of the work of the experiment station and of the college in general are carried to the state at large. This work as at present organized embraces many lines of activity.

The tabulation of the number served by the various lines during the year ending December 1, 1912, is as follows:

	Attendance
Farmers' Institutes (246 sessions)	28,231
Two Special Trains	7,411
Five Movable Schools	680
Two Farmers' Short Courses	97
Two Housekeepers' Short Courses	56
Colorado Farmers' Congress	44
Normal Institutes	5,535
Exhibit at Fairs	43,836
Total	85,890

Lines of Work

The following lines of extension work are being conducted by the college: Farmers' Institutes, Agricultural Special Trains, Demonstration Farms, Movable School, Boys' and Girls' Agricultural Clubs, Special Service, Rural Education, and Miscellaneous.

Farmers' Institutes

The Farmers' Institute is the farmers' commercial club. It is, and always will be, a local affair; and if it is to be a success it must be organized and conducted by the farmers, themselves. In every community there are some farmers who meet with a larger measure of success than do others, farmers who are able to more fully solve the problems of the community.

The object of the Farmers' Institute is to bring the practice of all the farmers of the community up to the standard set by these community leaders, and if possible to set higher standards for these leaders, themselves.

A well-balanced program should present both the broad principles and their local application.

It should be the business of the farmers themselves to arrange this program, and the responsibility should rest upon them, not upon the business men of the town nor upon the Agricultural College, although both are always glad to help.

The college will furnish one or more speakers, paying all traveling expenses other than local hotel bills, and will assist in the organization and development of farmers' institutes within the state. The people of the community holding the institute will in most cases be expected to furnish the place of meeting, the advertising, and pay the local hotel expenses of the college speakers.

Wherever possible, it is strongly recommended that this work be carried on under the direction of a permanent organization.

Agricultural Special Trains

In co-operation with the various railroad lines of the state, the Agricultural College has operated special institute and demonstration trains, thereby reaching a greater number of people than would be possible by any other means. It is believed that these trains have been productive of much good, and it is hoped that this feature of extension work may be extended. The importance of the results obtained is amply attested by the increase in production in special lines of industry, such as potato growing in mountainous districts following the operation of the trains.

Demonstration Farms

Because of the diversity of climatic and soil conditions in the various parts of Colorado, it has been thought advisable to undertake the management of demonstration farms and fields in co-operation with individuals, corporations, and associations.

On these farms and fields it is expected to put in operation the principles and practices advocated in the farmers' institutes, and to operate these for profit, using demonstrated successes rather than experiments.

Records are to be kept, and it is hoped to make of these farms and fields actual examples to their localities of the profit of wide agricultural practices.

A limited number of these is now being undertaken.

Movable Schools

Whenever a community wishes a more thorough and comprehensive institute in any special line of agricultural industry than can be given in the ordinary farmers' institutes, a class will be organized with a limited membership and an enrollment fee large enough to pay expenses, to study this subject from one to two weeks. In general classes should have from 20 to 40 members, with enrollment fee from $1.00 to $2.00 each. The college is now prepared to conduct a limited number of movable schools in dairying, poultry raising, fruit industry, and home economics.

Boys' and Girls' Agricultural Clubs

There are over 60,000 boys and girls in rural schools in Colorado, and a greater number in towns depending on farming communities for support. In April, 1910, the Colorado Agricultural College began the organization of Boys' and Girls' Agricultural clubs with the object of interesting them in studying plant and animal life, and in competing in school district, county, and state contests for exhibits of farm crops.

The Agricultural College will continue this work in each county where the county superintendent of schools is willing to help.

Our plan is to organize a Boys' and Girls' Club in any school district where the farmers and business men will offer $10 in prizes for any one of these crops; a first prize of $3, a second prize of $2, and five prizes of $1 each, making seven prizes for each crop in each school district. The college furnishes plans for the work and a constitution for the club.

The Agricultural College asks the co-operation of farmers and their families, farmers' organizations, newspapers, business men, banks, fair associations, women's clubs, commercial clubs, county superintendents of schools, and teachers, in pushing this work.

Farmers' and Housekeepers' Week

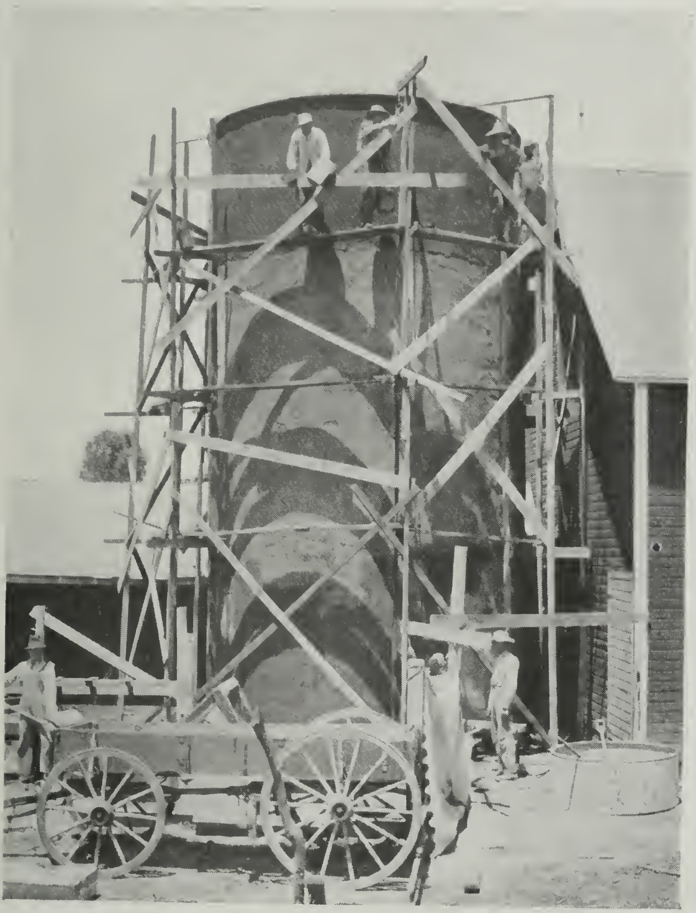
Each year the Agricultural College keeps open house to farmers and housekeepers for a week at Fort Collins. For this week a program is prepared which aims to cover the more important phases of agricultural activity within the state. These topics are presented by recognized authorities both within and without the state.

Farmers' and Housekeepers' Week this year will occur January 13-17, 1914.

Special Services

By an arrangement with the Superintendent of Extension, special service, such as superintendence for the construction of silos and other farm buildings and equipment, will be rendered. For such extension service, no charge other than expenses will be made. While the amount of this service which it is possible to render is of necessity limited, so far as possible the college will be glad to send trained men to the individual farmer, to advise and assist in the settlement of questions, relative to live stock, dairying, poultry, or potato growing, as well as for general farm crops, such as grain, alfalfa, etc.

The college will be particularly glad to assist in the introduction of agriculture and mechanic arts into the public schools wherever its assistance may be desired.



A Phase of the College Extension Service

Committee on Rural Education.—During the past year this committee had charge of arranging for instruction in agriculture and home economics, which was given before the normal teachers' institutes. It also provided speakers before various teachers' meetings and answered correspondence relating to the introduction of the above subjects in rural schools. The activity of the community is continued along the above lines. The committee is prepared to answer correspondence and do whatever is in its power to further the interests of agricultural education. Communications should be addressed to S. Arthur Johnson, Chairman.

The Farmers' Congress of Colorado

The Fourth Annual Session of the Farmers' Congress convened at the college, January 16-17, 1913. This is the only organization in the state affording an opportunity for effective co-operation between the various organizations for the promotion of agricultural development and education within the state.

The object of the Farmers' Congress as set forth in the constitution is as follows:

Article II.—Object

Section 1.—The object of the Farmers' Congress of Colorado shall be to furnish opportunity for effective co-operation between the various organizations for the promotion of agricultural development and education within the state, and to act in an advisory capacity to the State Board of Agriculture.

The officers for 1913 are as follows:

President, E. R. Bliss, Greeley
First Vice-President, Lou D. Sweet, Carbondale
Second Vice-President, David McMurdo, Castle Rock
Secretary-Treasurer, C. H. Hinman, Fort Collins

Executive Committee:

Mrs. Agnes Riddle, Denver, Denver District
C. M. Stitt, Fort Morgan, Plains District
W. S. Montgomery, Meeker, Northwestern District
W. P. Price, Montrose, Western District
Mrs. Rosepha Pulford, Durango, Southwestern District
R. A. Chisholm, Del Norte, San Luis Valley District
C. J. Cover, Rocky Ford, Arkansas Valley District

Miscellaneous

The Agricultural College is constantly called upon to furnish speakers for Farmers' Unions, Grange meetings, and Agricultural Picnics, as well as judges and speakers for local and county fairs. In so far as men and funds are available, the college is glad to comply with these requests.

Inquiry concerning any of the above lines of work should be addressed to the Superintendent of Extension, Colorado Agricultural College, Fort Collins, Colorado.

THE EXPERIMENT STATION

OFFICERS

CHARLES A. LORY, LL. D.	President
C. P. GILLETTE, M. S.	Director
L. M. TAYLOR	Secretary
MARGARET MURRAY	Executive Clerk

HEADS OF SECTIONS

C. P. GILLETTE, M. S.	Entomologist
WM. P. HEADDEN, A. M., Ph. D.	Chemist
G. H. GLOVER, M. S., D. V. M.	Veterinarian
ALVIN KEYSER, A. M.	Agronomist
WALTER G. SACKETT, B. S.	Bacteriologist
J. O. WILLIAMS, B. S. A.	U. S. Expert-in-Charge Horse Breeding
*E. R. BENNET, B. S.	Horticulturist
B. O. LONGYEAR, B. S.	Botanist
GEO. E. MORTON, M. L., B. S. A.	Animal Husbandman
E. B. HOUSE, B. S. (E. E.), M. S.	Irrigation Engineer

SPECIALISTS AND ASSISTANTS

V. M. CONE, B. S.	Irrigation Investigations
ROBERT E. TRIMBLE, B. S.	Assistant Irrigation Investigations
P. K. BLINN, B. S.	Alfalfa Investigations
EARL DOUGLASS, M. S.	Assistant Chemist
S. ARTHUR JOHNSON, M. S.	Assistant Entomologist
*B. F. KAUPP, M. S., D. V. S.	Veterinary Pathologist
GEO. P. WELDON, B. S.	Assistant in Entomology
*R. S. HERRICK, B. S.	Field Horticulturist
C. L. FITCH	Potato Investigations
W. E. VAPLON	Poultry Investigations
JAMES HUTTON	Assistant Horse Breeding
J. W. ADAMS, B. S.	Agronomy Assistant, Dry Land Investigations
ELLWOOD D. ROOD, A. B.	Assistant Chemist
PAUL S. JONES, B. S.	Assistant Irrigation Investigations
W. W. ROBBINS, M. A.	Assistant Botanist
*S. VAN SMITH, B. S.	Assistant Horticulturist
RALPH L. PARSHALL, B. S.	Assistant Irrigation Investigations

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*Resigned.

The Agricultural Experiment Station, organized under the laws of Congress, is an integral part of the Agricultural College. As the endowment given by the United States is a trust fund for the special purpose of scientific investigation of agricultural problems, no part of the fund can be used for paying salaries of instructors. Bulletins are issued as a means of disseminating the results of investigations. Funds appropriated under the Hatch Act, may be used for investigations in agricultural subjects according to the needs of the various states. The Adams Act fund is for original scientific research, only.

In order that the results of scientific investigation may be utilized, object lessons, explanations, and practical applications are needed. For example, the development or discovery of a plant adapted to particular conditions may be a proper subject of investigation under Government funds, but the production of improved seed when obtained and its distribution is not within the activities of the Government funds. Such distribution is, however, important and necessary to utilize the scientific investigations, and inquiries other than scientific may be of very great value in the improvement of agricultural practice. This need is met by the state appropriations. Thus the Legislature of Colorado made appropriations in 1911 amounting to $45,000 for inquiry, investigation, and dissemination of information concerning potatoes, fruit, dry farming, grains and plants, animal husbandry, horse breeding, and poultry.

Bacteriological Laboratory

The Experiment Station, therefore, supplements the work of the college as an instructional institution. It serves to give the institution an atmosphere of scientific investigation. The results of the work, published in bulletins in editions of from five to twenty thousand, are scattered widely, not only through Colorado, but through every other state and civilized nation of the world.

The results of investigations and of related inquiries have been published in 195 bulletins and numerous pamphlets and circulars. These are sent free, without postage, through the mails by authority of Congress, under the signature of the director. These bulletins cover investigations with irrigation, sugar beets, alfalfa, potatoes, grains, stock feeding, dairying, soils, weeds, fruits, cantaloupes, plant diseases, injurious insects, etc. The investigations of the experiment station laid the foundation for the development of the sugar beet industry in the state, so that, when favorable economic conditions were reached, the results of the scientific investigations were available and development was rapid.

Forestry, Agriculture, and Irrigation Go Hand in Hand

One of the principal means of measurement of water adopted throughout the western United States and adjacent countries is the result of the studies of our Experiment Station. The investigations in irrigation were the basis of the successful defense of the State of Colorado against the attack from the State of Kansas, an attack which, if successful, would have almost entirely prevented the further development of irrigation in the western United States. The rapid development of the past few years has come since that case was decided by the U. S. Supreme Court.

The studies of the codling moth, plant lice, leaf roller, and other pests, have resulted in intelligent control of these important injurious insects. The station has also been instrumental in the development of varieties of grain adapted to high altitudes like the San Luis Valley. It has also given considerable attention to the plains and has been a help to settlers there. It has prevented the destruction of the cantaloupe, and has found the cause of some obscure troubles in the fruit industry. It has also determined the causes of the so-called "brown spots," or "black alkali," of some of our soils. The results of this investigation will prove a great benefit to the agriculture of the West. The work made possible by the state appropriations has multiplied the potato industry of the state many times and helped to make it more profitable. The station employees answer thousands of letters of inquiry annually.

The various lines of activity make the station of great service to the state and nation, and make it a strong instructional department of the college, not alone for the students on the campus, but for thousands of people throughout Colorado and other states.

A leaflet giving the names of the bulletins that have been printed will be furnished upon application to the director. Any available bulletins will be sent on request. Future publications will be sent regularly if a request is made to be placed on the mailing list.

Long's Peak—Visible From the Campus

Register of Students

In the following list, A. H. stands for Animal Husbandry; Agro., for Agronomy; Agr. for Agriculture; C. E., for Civil and Irrigation Engineering; D. S., for Home Economics; Eng., for Engineering; E. E., for Electrical Engineering; Ent., for Entomology; G. S., for General Science; H., for Horticulture; M. E., for Mechanical Engineering; Vet., for Veterinary Medicine.

GRADUATE STUDENTS

Annis, Lorna	Fort Collins, Colo.
Joe Brill	Fort Worth, Tex.

NAME	COURSE	ADDRESS
	SENIORS	
Barbour, A. Richmond	C. E	Edgewater, Colo.
Barkley, Ruth	D. S	Fort Collins, Colo.
Bell, James D.	C. E	Las Animas, Colo.
Blair, Myron G.	A. H	Yoder, Colo.
Boyle, Frank	C. E	Canon City, Colo.
Briggs, Zelma	D. S	West Point, Nebr.
Brigham, Leslie E.	C. E	Trinidad, Colo.
Butterworth, Carmen	D. S	Longmont, Colo.
Chase, Raymond	Vet.	Sedalia, Colo.
Clement, Peter E.	A. H	Fort Collins, Colo.
Coiner, Lester	C. E	Golden City, Mo.
Colson, William J.	C. E. and E. E	Fort Collins, Colo.
Copeland, Edna	G. S	Athens, Ohio
Duvall, Wayne J.	E. E	Lucerne, Colo.
Easterday, A. Merle	C. E	Greeley, Colo.
Edwards, Alonzo	C. E	Greeley, Colo.
Gaboury, Louise	D. S	Knoxville, Tenn.
Gates, Herbert	Ent.	Denver, Colo.
Goeder, Frank	C. E	Rangely, Colo.
Herdman, Robert	C. E	Rocky Ford, Colo.
Horn, Pearl	D. S	Lamar, Colo.
Howells, Owen	Vet.	Rock Springs, Wyo.
Hugins, Charles	A. H	Littleton, Colo.
Hurick, Oscar	H.	Eaton, Colo.
Jackson, Raymond	C. E	Elmont, Kan.
James, Marjorie	D. S	Denver, Colo.
Johnson, Waldo	Vet.	Fort Collins, Colo.
Linebarger, Ruth	D. S	Tiffany, Colo.
McGregor, Archie N.	Vet.	Fort Collins, Colo.
McMurdo, George A.	Agro	Castle Rock, Colo.

NAME	COURSE	ADDRESS
Moles, Hunter S.	A. H	Edgewater, Colo.
Montinola, Manuel A.	G. S	Jaro, Philippines
Nelson, Carmen J.	A. H	Boulder, Colo.
Olson, Halle D.	C. E	Fort Collins, Colo.
Patterson, DeWitt	Vet.	Atwood, Colo.
Paxton, Wilma	D. S	Canon City, Colo.
Reiss, Karl	Agro	New York City
Richards, George	Vet.	Littleton, Colo.
Richardson, Alonzo B.	M. E	Delta, Colo.
Schultz, Peter	A. H	Arvada, Colo.
Seher, Otto	Vet.	Pueblo, Colo.
Sewell, Robert	E. E	Carbondale, Colo.
Stewart, Charles C.	Vet.	Castle Rock, Colo.
Swartz, Gustava	D. S	Angeline, Mo.
Tobin, Eugene	Vet.	Montrose, Colo.
Traxler, Harry	C. E	Lamar, Colo.
Webster, Charles	Vet.	Monte Vista, Colo.
Wilson, Maryetta	D. S	What Cheer, Ia.
Winchell, Ruth	D. S	Edgewater, Colo.
Work, Marion	E. E	Greeley, Colo.

JUNIORS

Allen, Milton W.	A. H	Denver, Colo.
Antles, Harry	Agro	Grand Junction, Colo.
Barclay, Emilie	D. S	Longmont, Colo.
Bryant, John	Vet.	Flagler, Colo.
Button, Forrest E.	A. H	Denver, Colo.
Chase, Myra	D. S	Fort Morgan, Colo.
Collins, Cassius	Vet.	Fort Collins, Colo.
Connor, Leggio	A. H	Denver, Colo.
Cross, Floyd	Vet.	Fort Collins, Colo.
Decker, Elbert	C. E	Paonia, Colo.
Divelbiss, Edward	H.	Pueblo, Colo.
Dutton, Bert E.	E. E	Pagosa Springs, Colo.
Edmondson, W. E.	M. E	Berthoud, Colo.
Edmondson, W. O.	F.	Berthoud, Colo.
Elder, Janet	D. S	Fort Morgan, Colo.
Eppstein, Harvey L.	C. E	Paonia, Colo.
Fetz, Rudolph	Agro	Montrose, Colo.
Golden, Homer B.	C. E	Longmont, Colo.
Grant, John	A. H	Leadville, Colo.
Grant, Edith	D. S	Boulder, Colo.
Green, William	Vet.	Leadville, Colo.
Hapney, Frank	Vet.	Fort Collins, Colo.
Hartford, Albert	M. E	Berthoud, Colo.
Hasty, Carl M.	A. H	Lamar, Colo.
Havighorst, Russell	M. E	Fort Collins, Colo.
Hymer, G. Crete	Vet.	Fort Collins, Colo.
Jackson, Lawrence O.	Agro	Denver, Colo.
Klinefelter, Lee	E. E	Fort Collins, Colo.
Kraemer, Helen	D. S	Denver, Colo.
Lahrman, Carl	E. E	Alamosa, Colo.

NAME	COURSE	ADDRESS
Luce, Aurel	D. S	Loveland, Colo.
Marks, Helen	D. S	Fort Collins, Colo.
Mather, Anna	D. S	Fort Collins, Colo
McCann, Roud	A. H	Maybell, Colo.
McCullah, Homer	Vet.	Fort Collins, Colo
McGrath, Neill B.	A. H	Lamar, Colo.
McKittrick, Roy	A. H	Billings, Mont.
Montgomery, Dorothy	D. S	Alliance, Nebr.
Mullings, George	C. E	Alamosa, Colo.
Murphy, Harry	M. E	Eaton, Colo.
Neugebauer, Edna	D. S	Fort Collins, Colo.
Nye, Elwood	Vet.	Rigby, Ida.
Officer, Charles C.	Vet.	Fort Collins, Colo.
Pollock, John	Ent.	Fort Collins, Colo.
Richardson, Dorsey F.	M. E	Delta, Colo.
Sanborn, Ruth	D. S	Boulder, Colo.
Seaman, Raymond	F.	Denver, Colo.
Sheeley, Ross	A. H	Fort Collins, Colo.
Smith, Harry	A. H	Chivington, Colo.
Spahr, Louis	E. E	Cokedale, Colo.
Stewart, Thomas	Vet.	Denver, Colo.
Townsend, Martha	D. S	Fort Collins, Colo.
Wakeland, Claude	E.	Lay, Colo.
Wharton, Hazel	D. S	Fort Collins, Colo.
White, Asbury	C. E	Pueblo, Colo.
Williams, Hayes	A. H	Lamar, Colo.
Williams, Elizabeth	D. S	Fort Collins, Colo

SOPHOMORES

NAME	COURSE	ADDRESS
Allan, James	Agr.	Pueblo, Colo.
Allen, Josephine	D. S	Denver, Colo.
Allen, Mavea	D. S	Denver, Colo.
Ames, Mary	D. S	Parker, Colo.
Anderson, Annabel	D. S	Louisville, Ky.
Atkinson, Frank	C. E	Colorado Springs, Colo.
Bader, Ernest	Agr.	Loveland, Colo.
Bevan, Wendell	Agr.	Fort Collins, Colo.
Brown, Florence	D. S	Falcon, Colo.
Chisholm, Archie	Agr.	Del Norte, Colo.
Clifford, Charles W.	Agr.	University Park, Colo.
Cotton, Louise	D. S	Denver, Colo.
Cottrell, Roy	C. E	Fort Collins, Colo.
Collopy, Joseph	E. E	Fort Collins, Colo.
Darrow, Earl	Agr.	Fort Collins, Colo.
Davis, Ruth	D. S	Canon City, Colo.
Dimmitt, Harry	M. E	Fort Collins, Colo.
Dixon, Beryl	D. S	Fort Collins, Colo.
Downey, Mabel	D. S	Fort Collins, Colo.
Emigh, Hazel	D. S	Cheyenne, Wyo.
English, J. Gordon	Eng.	Greeley, Colo.
Eyser, Alma	D. S	Fort Morgan, Colo
Fauber, Herman	Agr.	Montrose, Colo.

NAME	COURSE	ADDRESS
Fluke, Charles	Ent.	Grand Junction, Colo.
Gillespie, Glenn	Agr.	Loveland, Colo.
Gillette, Esther	D. S	Fort Collins, Colo.
Graham, Harry	C. E	Vinton, Ia.
Graves, Nellie	D. S	Arvada, Colo.
Groom, Walter A.	Agr.	Boulder, Colo.
Hammond, John	C. E	Colorado Springs, Colo.
Hays, Pauline	D. S	Kinnear, Wyo.
Hennebold, August	E. E	Fort Collins, Colo.
Hibner, A. R.	C. E	Three Oaks, Mich.
Higgins, Clara	D. S	Leadville, Colo.
Hopkins, Carl	Agr.	Denver, Colo.
Hugins, Walter	C. E	Littleton, Colo.
Johnson, Abner	C. E	Niwot, Colo.
Johnson, Irene	D. S	Golden, Colo.
Johnson, Adolph	Eng.	Denver, Colo.
Jones, Horace	Eng.	Vinton, Ia.
Joslin, John J.	Eng.	Denver, Colo.
Kellogg, Lee	Agr.	Marshalltown, Ia.
Kern, Lena	D. S.	Windsor, Colo.
Kidder, Harold	C. E	Loveland, Colo.
Kimzey, Robyn V.	Agr.	Eastonville, Colo.
King, Ben	Agr.	Fort Collins, Colo
Knapp, Homer	Agr.	Las Animas, Colo.
Krythe, Geert	Agr.	Roden, Holland
Leigh, Wm.	Agr.	Lamar, Colo.
Limbocker, Forrest	Agr.	Pueblo, Colo.
Lunn, Aleck	M. E	Fort Collins, Colo.
Marks, Elias	C. E	Sterling, Colo.
Martin, Eva	D. S.	Cripple Creek, Colo.
McCarthy, Thomas	C. E	Jansen, Colo.
McKune, Emory	H.	Fort Collins, Colo.
Mercer, George	C. E	Greeley, Colo.
Mills, Elda	D. S.	Ordway, Colo.
Morrison, Wallace K.	M. E	Fort Collins, Colo.
Morse, Carl	A. H	Denver, Colo.
Netherton, Theodora	D. S	Gallatin, Mo.
Nevius, Harry	Agr.	Long Beach, Calif.
Osborn, L. C.	C. E	Loveland, Colo.
Parker, Eva	G. S	Pueblo, Colo.
Ray, Glenn L.	Agr.	Osceola, Nebr.
Saboe, Grace	D. S	Longmont, Colo.
Sandhouse, Herman A.	A. H	Fort Collins, Colo.
Short, Clarence C. Paul	H.	Denver, Colo.
Shutt, Marjorie	D. S	Fort Collins, Colo.
Smith, Frank	Agr.	Windsor, Colo.
Smith, Thomas R.	C. E	Denver, Colo.
Smith, Samuel	C. E	Castle Rock, Colo.
Strange, H. Oliver	Agr.	Castle Rock, Colo.
Strecker, George	E. E	Fort Collins, Colo.
Strong, Richard	Agr.	Lamar, Colo.
Swanson, Alben	M. E	Arvada, Colo.

NAME	COURSE	ADDRESS
Veverka, Felix	Agr.	Sterling, Colo.
Warner, Pauline	D. S	Fort Collins, Colo.
Weldon, Margaret	D. S	Denver, Colo.
Wilber, Mary Louise	D. S	Denver, Colo.
Woods, Myrtle	D. S	Cripple Creek, Colo.
Woods, Harry	H.	Farmington, N. M.

FRESHMEN

Alford, Clark	Eng.	Castle Rock, Colo.
Ames, Cyrus	Vet.	Parker, Colo.
Anderson, Blanche	D. S	Canon City, Colo.
Atto, Zelma	D. S	Edgewater, Colo.
Babey, Francis	Eng.	Del Norte, Colo.
Barney, Edward	Eng.	Denver, Colo.
Barnard, Russell	Eng.	Denver, Colo.
Bateman, Gilbert	Agr.	Trinidad, Colo.
Bebee, Ruth	D. S	Cripple Creek, Colo.
Beggs, Stewart	Vet.	Fort Morgan, Colo.
Benson, Joseph	Eng.	Arvada, Colo.
Bluebaugh, James	Agr.	Bennett, Colo.
Birkle, Beulah	D. S.	Platteville, Colo.
Bowhay, Leonard	Agr.	Denver, Colo.
Briggs, George	Eng.	Denver, Colo.
Brown, Emory	Agr.	Littleton, Colo.
Buchanan, Nettie	D. S	Durango, Colo.
Buck, Lela	D. S	Arvada, Colo.
Buell, Jewett	Agr.	Haswell, Colo.
Bull, Sidney	Agr.	Grand Junction, Colo.
Burckhalter, George	Agr.	Grand Junction, Colo.
Burton, Herbert	Vet.	Florissant, Colo.
Calhoun, Wendell	Agr.	Buena Vista, Colo.
Carnahan, Walter	Eng.	Carbondale, Colo.
Charles, Thomas	Eng.	Grand Junction, Colo.
Cheney, Orpha	D. S	Fort Collins, Colo.
Chisholm, Francis	Agr.	Del Norte, Colo.
Coffin, Ruby	D. S	Longmont, Colo.
Comstock, Edwin	Eng.	Littleton, Colo.
Conrey, Stephen	Eng.	Fort Collins, Colo.
Copeland, T. H.	Eng.	Athens, Ohio
Cramer, Fern	D. S	Loveland, Colo.
Crandall, Hazel	D. S	North Loup, Nebr.
Dake, Gertrude	D. S	Fort Collins Colo.
Day, Maitland	Eng.	Victor, Colo.
Dean, Archie	Agr.	Buena Vista, Colo.
Deatherage, Hubert T.	Eng.	Harriman, Tenn.
Dickman, Andrew	Vet.	Poncha Springs, Colo.
Divine, Grayce	D. S	Palisade. Colo.
Dodsworth, William	Vet.	Goldfield, Colo.
Doke, Horace	Eng.	Greeley, Colo.
Doud, Lee	Agr.	Denver, Colo.
Dupuy, Albert	Eng.	Montrose, Colo.
England, Herbert	Eng.	Independence, Colo.

NAME	COURSE	ADDRESS
Essex, Charles	Eng.	Pueblo, Colo.
Farr, Jennie	D. S	Fort Morgan, Colo.
Fisher, Le Roy	Eng.	Denver, Colo.
Fisher, Leonard	Eng.	Denver, Colo.
Fisher, Cecile	D. S	Pueblo, Colo.
Fluke, Fred B.	Eng.	Grand Junction, Colo.
Frisbee, Otto	Agr.	Lamar, Colo.
Galligan, Gertrude	D. S	Pueblo, Colo.
Garvin, Victor	Agr.	Denver, Colo.
Gates, George C.	Agr.	Monte Vista, Colo.
Gerkin, Samuel C.	Eng.	Carbondale, Colo.
Giddings, Ralph	Agr.	Fort Collins, Colo
Ginter, Roy	Agr.	Rocky Ford, Colo.
Godfrey, Hermion	Eng.	Yampa, Colo.
Goodman, Albert	Vet.	Pueblo, Colo.
Graeber, Lawrence	Agr.	Pueblo, Colo.
Graham, Laura	D. S	Pueblo, Colo.
Griffiths, Thomas	Eng.	Rock Springs, Colo.
Haakenson, Harry	Agr.	Edgewater, Colo.
Habermann, Louis	Agr.	Rico, Colo.
Hale, Joseph	Agr.	Loveland, Colo.
Halloran, Louise	D. S	Trinidad, Colo.
Ham, Letty	D. S	Hasty, Colo.
Hargis, William	Agr.	Fort Collins, Colo.
Hardie, Paul	Eng.	Victor, Colo.
Haythorn, Joseph	Agr.	Eaton, Colo.
Hewitt, Edna	D. S	Platteville, Colo.
Hill, Ralph	Agr.	Arapahoe, Nebr.
Hobaugh, Gladys	Agr.	Montrose, Colo.
Hoch, Arnold	Eng	Yuma, Colo.
Hoffman, Lydia	D. S	Fort Collins, Colo.
Hopper, Everett	Agr.	Monte Vista, Colo.
Hollingshead, Roy	Eng.	Gunnison, Colo.
Horner, Eula	D. S	Fort Collins, Colo.
Howard, Edna	D. S	Fort Collins, Colo.
Huff, Esther	D. S	Colorado City, Colo.
Husted, Elbert	Agr.	Denver, Colo.
Ingram, Lester	Agr.	Buffalo, N. Y.
Johnson, Lura	D. S	Wray, Colo.
Kern, Ruth	D. S	Fort Collins, Colo.
Kinghorn, Glenn	Eng.	Fort Collins, Colo
Kinney, Herbert	Eng.	Denver, Colo.
Knight, Natalie	D. S	Boulder, Colo.
Kobey, Harold	Agr.	Aspen, Colo.
Koppe, Grace	D. S	Delta, Colo.
Kubota, Masatoma	Eng.	Osaka, Japan
Lamb, Cecil	Vet.	Fort Morgan, Colo.
Lamont, Lida	D. S	Denver, Colo.
Law, George	Eng.	Fort Collins, Colo.
Leiper, Thomas	Agr.	Denver, Colo.
Light, Helen	D. S	Snow Mass, Colo.
Lighthall, Earl	Vet.	El Paso, Texas

NAME	COURSE	ADDRESS
Louden, George	Vet.	Arvada, Colo.
Mattoon, Winifred	D. S.	Fort Collins, Colo.
Maxwell, Frank	Vet.	Georgetown, Colo.
McClusky, Harry	Agr.	Cope, Colo.
McLeod, William	Eng.	Denver, Colo.
Moore, Francis	Agr.	Fruita, Colo.
Moore, Floyd	Agr.	Montrose, Colo.
Morrison, James	Agr.	Fort Collins, Colo.
Murphy, Julius	Eng.	Eaton, Colo.
Murray, Edward	Eng.	Fort Morgan, Colo.
Nevitt, John V.	Agr.	Monte Vista, Colo.
Noce, Daniel	Eng.	Denver, Colo.
Norris, Hualapai	D. S.	Denver, Colo.
Paxton, George	Eng.	Aspen, Colo.
Pease, Ray	Vet.	Laporte, Colo.
Pierce, Laura	D. S.	Pueblo, Colo.
Plumb, Charles	Agr.	Greeley, Colo.
Raber, Leon	Eng.	Del Norte, Colo.
Reynolds, Burrell	Eng.	Greeley, Colo.
Ricketts, Stanley	Agr.	Fort Collins, Colo.
Roth, Walter J.	Agr.	Denver, Colo.
Roy, Reba	D. S.	Fort Collins, Colo.
Sackett, Thorwald	Eng.	Telluride, Colo.
Schmitt, Lucile	D. S.	Colorado Springs, Colo.
Scoggin, W. Dean	D. S.	Boulder, Colo.
Searles, Willett	Eng.	Cripple Creek, Colo.
Seyfreid, Rudolph	Eng.	Del Norte, Colo.
Shipman, Charles	Eng.	Golden, Colo.
Slayton, Thomas	Vet.	Wellington, Colo.
Sorenson, J. C.	Vet.	Rigby, Ida.
Stiers, Flavious	Eng.	Canon City, Colo.
Strock, Glenn	Eng.	Longmont, Colo.
Strong, William	G. S.	Lamar, Colo.
Sweitzer, L. Morgan	Agr.	Delta, Colo.
Swink, Ralph	Agr.	Rocky Ford, Colo.
Treichler, Carl	Agr.	Pueblo, Colo.
Tucker, Victor	Eng.	Craig, Colo.
Twitchell, John Mac	Vet.	Canon City, Colo.
Templin, Laten	Agr.	
Vernold, Hedwig	D. S.	Telluride, Colo.
Wear, Byron	Agr.	Denver, Colo.
Weaver, Dan	Vet.	Coon Rapids, Iowa
Weigand, Leslie	Agr.	Rocky Ford, Colo.
Weller, Charles	Eng.	Denver, Colo.
West, Raymond	Eng.	Edgewater, Colo.
White, Wm.	Eng.	Sedalia, Colo.
Whiting, Helen	D. S.	Denver, Colo.
Wight, Carroll Z.	Agr.	Las Animas, Colo.
Wilmers, Joseph N.	Vet.	Bayfield, Colo.
Wilson, Frank	Vet.	Palisade, Colo.
Witherbee, Max O.	Eng.	Brighton, Colo.
Wittmeyer, Arthur W.	Vet.	Montrose, Colo

NAME	COURSE	ADDRESS
Wright, Harold S.	Agr.	New York City
Zenor, Raymond	Vet.	Fort Collins, Colo.
Zollner, Elsie	D. S.	Fort Collins, Colo.

UNCLASSIFIED

Akin, Howard	Fort Morgan, Colo.
Allen, Eva	Fort Morgan, Colo.
Allen, T. Carlin	Denver, Colo.
Apiseche, Ovidio	Buenos Ayres, Argentine
Artschwager, Ernest	Linkuhnen, Germany
Ashby, Hope	Watson, Colo.
Avery, Rowland	Santa Fe, New Mexico
Bauder, Katheryn	Fort Collins, Colo.
Beer, Justin	Denver, Colo.
Bennett, Ruth	Fort Collins, Colo.
Bishoff, Mrs. M. Alice	Nucla, Colo.
Boyack, Breeze E.	Grinnell, Ia.
Briggs, Walter	Fort Collins, Colo.
Bucknam, Roland	De Ruyter, N. Y.
Bunker, Jerome	Greeley, Colo.
Carpenter, Hubert M.	Evanston, Ill.
Carman, Mary I.	Denver, Colo.
Clark, Hazel	Pratt, Kan.
Coffin, Roy	Longmont, Colo.
Copeland, Charlotte	Athens, Colo.
Dean, Shirlie	Denver, Colo.
Dreyfuss, Leonard	Shrevesport, La.
Edwards, Ruth	Fort Collins, Colo.
Fisher, Raymond	Akron, Colo.
Gibson, Homer	Denver, Colo.
Golden, Carl	Longmont, Colo.
Good, Gladys	Fort Morgan, Colo.
Good, Hazel	Fort Morgan, Colo.
Grigsby, John R.	Wray, Colo.
Grigsby, George	Wray, Colo.
Hagaman, Arthur	Lamar, Colo.
Hart, Louis I.	Boulder, Colo.
Hartman, Donna	Maher, Colo.
Headden, Helen	Fort Collins, Colo.
Jackson, Joseph	Shrevesport, La.
Kinney, Jane	Fort Collins, Colo.
Knapp, Horace	Las Animas, Colo.
Knobel, Ernest	Denver, Colo.
Law, Fred	Fort Collins, Colo.
Lazear, Robert	Chicago, Ill.
Linger, Earl	Denver, Colo.
Martin, Stratton A.	Boulder, Colo.
McCreery, Edith	Greeley, Colo.
Moore, Grace	Montrose, Colo.
Morgan, Leona E.	Paonia, Colo.
Nuckolls, C. O.	Granby, Colo.
Pierce, Beth	Fort Collins, Colo.

Powell, Ben F.	Manzanola, Colo.
Prime, Elmer	Arapahoe, Neb.
Ramsey, Clyde	Denver, Colo.
Randall, John	Fort Collins, Colo.
Richardson, Martha	Cripple Creek, Colo.
Ruthven, Elsie	Fort Collins, Colo.
Scott, Ruby	Dayton, Ia.
Shackelford, Goddard	Denver, Colo.
Taylor, Mrs. Mary P. C.	Denver, Colo.
Thomas, Edgar H.	Emporia, Kan.
Towse, Nora	Fort Collins, Colo.
Vandewark, Floyd	Fort Collins, Colo.
White, Charles	Shadyside, Ohio.
Wilkin, Helen	Fort Collins, Colo.
Winslow, Irene	Fort Collins, Colo.

CONSERVATORY OF MUSIC

Akin, Julia	Fort Collins, Colo.
Allen, Thurma	Laurens, Ia.
Allen, Lenore	Laurens, Ia.
Alpert, Ethel	Fort Collins, Colo.
Anderson, Olga	Broomfield, Colo.
Ashby, Hope	Watson, Colo.
Atherly, Hazel	Fort Collins, Colo.
Ayer, Gertrude	Dixon, Wyo.
Ayers, Edna	Monte Vista, Colo.
Baker, Charlotte	Fort Collins, Colo.
Bateman, Gilbert	Fort Collins, Colo.
Bauder, Katheryn	Fort Collins, Colo.
Bay, Mabel	Fort Collins, Colo.
Beebe, Lucy	Fort Collins, Colo.
Beebe, Velma	Fort Collins, Colo.
Birkle, Beulah	Platteville, Colo.
Bishoff, M. Alice	Nucla, Colo.
Bowen, Earl	Fort Collins, Colo.
Breniman, Hortense	Fort Collins, Colo.
Brose, Clara M	Fort Collins, Colo.
Brown, Adeline	Fort Collins, Colo.
Brunstein, Milly	Fort Collins, Colo.
Brunstein, Rose	Fort Collins, Colo.
Bull, Sidney	Grand Junction, Colo.
Carlton, Lesley	Fort Collins, Colo.
Carlton, Jean	Fort Collins, Colo.
Carter, Ruth	Junod, Neb.
Carver, Claude	Wiley, Colo.
Chamberlin, Leola	Fort Collins, Colo.
Collins, Cassius	Fort Collins, Colo.
Cooke, Lois	Fort Collins, Colo.
Coover, Marie	Fort Collins, Colo.
Cusack, Dorothy	Westcliffe, Colo.
Davis, Harold	Fort Collins, Colo.
Dickinson, I. E.	Peyton, Colo.
Dilts, Arlene	Fort Collins, Colo.

Dixon, Georgia	Fort Collins, Colo
Douglas, Erma	Fort Collins, Colo.
Drager, Dorothy	Fort Collins, Colo.
Drake, Olive	Fort Collins, Colo.
Dyke, Mrs. J. E.	Laporte, Colo.
Epler, Hazel	Fort Collins, Colo.
Essex, C. Eugene	Pueblo, Colo.
Finney, Maude	Fort Collins, Colo.
Foote, Edna	Loveland, Colo.
Francis, Wm.	Fort Collins, Colo.
Frison, Paul	Ten Sleep, Wyo.
Gates, Dr. M. A.	Fort Collins, Colo.
Griffiths, Lula	Montrose, Colo.
Halderman, Iva	Fort Collins, Colo.
Ham, Amy	Hasty, Colo.
Hamilton, Carrie	Washington, Ia.
Hartman, Donna	Montrose, Colo.
Hays, Helen	Kinnear, Wyo.
Hubbell, Betty	Fort Collins, Colo.
Hunt, Marvilla	Fort Collins, Colo.
Hunt, Ruth	Fort Collins, Colo.
James, Clarence	Fort Collins, Colo.
Kennedy, Oral	Denver, Colo.
Kinney, Jane	Fort Collins, Colo.
Kuhn, Esther	Ignacio, Colo.
Lahrmann, Carl	Fort Collins, Colo.
Lamont, Mary	Denver, Colo.
Larkin, Marie	Fort Collins, Colo.
Liggett, Floyd	Fort Collins, Colo.
McLain, Wm.	Sterling, Colo.
McNeal, Marie	Hoehne, Colo.
Meyers, Edith	Fort Collins, Colo.
Meyer, Freda	Fort Collins, Colo.
Moore. Grace	Montrose, Colo.
Moore, Gladys	Fort Collins, Colo.
Mosier, Garnet	Fort Collins, Colo.
Mullings, Mae	Alamosa, Colo.
Muncy, Clarence	Dayton, Ohio
Murphy, J.	Fort Collins, Colo.
Murray, Marguerite	Grand Island, Nebr.
Myers, Mary	Hoehne, Colo.
Reynolds, Rex S.	Denver, Colo.
Richardson, Martha	Cripple Creek, Colo.
Rist, Charlotte	Fort Collins, Colo.
Rist, Anna	Fort Collins, Colo.
Rood, James	Fort Collins, Colo.
Runge, W. E.	Fort Collins, Colo.
Sayers, Ralph C.	Fort Collins, Colo.
Schofield, Le Nora	Bellvue, Colo.
Schoepp, Katherine	Denver. Colo.
Scott, Harold M.	Sterling, Colo.
Shantz, Frank	Fort Collins, Colo.
Starks, Hazel	Fort Collins, Colo.

Steinel, Dorathea	Fort Collins, Colo.
Stenett, Robert C.	Wiley, Colo.
Stoddard, Jennie L.	Loveland, Colo.
Strachan, Ida	Fort Collins, Colo.
Strahan, Mrs. R. M.	Fort Collins, Colo.
Taylor, William	Fort Collins, Colo.
Taylor, Earl	Fort Collins, Colo.
Taylor, Blythe	Peyton, Colo.
Thayer, Mrs. E. W.	Timnath, Colo.
Thayer, E. W.	Timnath, Colo.
Troutman, Lydia	Fort Collins, Colo.
Warner, Eleanor	Fort Collins, Colo.
Watson, Iva	Fort Collins, Colo.
Watts, Florence	Fort Collins, Colo.
Weldon, Edith	Fort Collins, Colo.
Whitcomb, Celestia	Duff, Nebr.
Wilkin, Esther	La Porte, Colo.
Wright, Lee	Delta, Colo.

SUMMARY

College Students—		
Graduate Students	2	
Seniors	50	
Juniors	57	
Sophomores	81	
Freshman	151	
Unclassified	62	
Total		**403**
School of Agriculture and Domestic Science—		
Fourth Year	8	
Third Year	61	
Second Year	113	
First Year	183	
Total		**365**
Music	107	
Farmers' Short Course	80	
Housekeepers' Short Course	55	
Twice Counted	28	
Total on the Campus		**983**
Agricultural Extension Service	85,890	
Twice Counted	135	
GRAND TOTAL		**86,737**

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THE COLORADO AGRICULTURAL COLLEGE

AGRICULTURE AND MECHANIC ARTS

1914 - 1915

FORT COLLINS
COLORADO

"I, a wandering student, seeking knowledge, came knocking at the gates of the Colorado Agricultural College, and it took me in," helped me to become an efficient workman, "filled me with inspiration, and when I left its doors, the kindly people of the state stretched out welcoming hands and gave me a man's work to do."

"The youth are in no way adding more lustre to their nation's flag than by each making the most of himself."—Proctor

Thirty-fifth Annual Register of the
Officers and Students

OF THE

Colorado Agricultural College

Agriculture and Mechanic Arts

PROSPECTUS FOR 1914-1915

FORT COLLINS, COLORADO

Series XIV. Number 1
Entered at the Post Office at Fort Collins Colorado, as Second-Class Matter

HOW TO USE THE CATALOGUE

Plan of the Catalogue.—The catalogue is divided into four parts. The first part, pages 1 to 36, is general in character, taking up in the order named, How to Use the Catalogue, Index, and Calendar, pages 4 to 10; State Board of Agriculture and Faculty, pages 11 to 15; Mission of the Agricultural College, pages 16 to 18; Campus, Buildings and Equipment, pages 18 to 25; Courses of Study, Entrance Requirements, and Accredited High Schools, pages 25 to 27; Requirements for Graduation, Special Courses, Advanced Standing of Students from other Colleges, Graduate Work, pages 27 to 31; Registration, Tuition, Expenses, etc., pages 32 to 35.

The second part, pages 36 to 60, deals with the schedules of the four divisions of work; the **Division of Agriculture**, which includes courses in Agronomy, Animal Husbandry, Entomology, Forestry, and Horticulture, pages 36 to 45; the **Division of General Science and Home Economics**, which includes courses in General Science and Home Economics, pages 46 to 49; the **Division of Mechanic Arts**, which includes Civil and Irrigation Engineering, Electrical Engineering, and Mechanical Engineering, pages 36 to 45; and the **Division of Veterinary Medicine**, pages 58, 59. The first two years of all the courses in each division are alike, so they are given but once; but the junior and senior years are different in each course as Agronomy, page 39, Horticulture, page 45.

The third part takes up, alphabetically, the seventeen departments of the college, and the work taught in each department. The subjects taught are arranged consecutively by numbers, commencing on page 60 with subjects in Agronomy, numbers 1 to 50, and ending with Veterinary Medicine, courses 650 to 708, page 120.

The fourth part takes up the Conservatory of Music, pages 121 to 124; the College Organizations, pages 124 to 130; College Publications, pages 130 to 132; Agricultural Extension, pages 132 to 136; the Experiment Station, pages 137 to 139; Register of Students, pages 140 to 152.

How to Find a Given Topic.—Suppose you want to know what is offered in Agriculture. Turn to the index and you will find Agriculture, Division of, is described on page 36. On 37, is given the course of study for first two years. You look over the list and want to know about the work in algebra. The number to the right, states the number of credits toward graduation, given for the subject. The number to the left, 502, means that in the third part of the catalogue, beginning page 60, Algebra is the 502nd subject. Again you want to know about Zoology. It is number 302, or the 302nd subject from page 60. In like manner any subject may be found, either by index reference or by number.

DIRECTIONS FOR THE NEW STUDENT

I. If possible, send your credentials from high school before college opens. It will save you time and trouble.

II. Students who have less than fourteen high school credit units cannot enter the college. Graduates of the eighth grade, who wish secondary work in Agriculture, Mechanic Arts. or Home Economics, may enter the Colorado School of Agriculture, which is maintained in connection with the college.

III. Inquiries either to the President or the Dean, concerning board, room, expenses, etc., will be promptly answered. It is the aim of the college to give you just as complete information as possible.

IV. When you arrive on the campus, if you are not met by a member of the reception committee, report to the Dean's office in the Main building.

V. An additional fee of $2.00 is charged for late registration. (See Calendar.)

VI. Attendance in classes is required from the date for the first scheduled recitation. Work missed, if the absence is excused, must be made up. Unexcused absences count zero in grading.

VII. After the student's registration is completed, the schedule can not be changed, except by permission of the Dean.

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COLORADO AGRICULTURAL COLLEGE

CALENDAR

Entrance Examinations, Tuesday, September 1, 1914
Registration of Students, Tuesday, September 1, and Wednesday, September 2, 1914
First Semester begins, Thursday, September 3, 1914
School of Agriculture begins October 6, 1914
Mid-Semester Report, October 30, 1914
Special Examinations for Removal of Conditions, October 31, 1914
Thanksgiving, Thursday, November 26, 1914
Registration for Second Semester, Thursday, December 17, 1914
Christmas Vacation begins Saturday, December 19, 1914
Christmas Vacation closes Sunday, January 3, 1915
Farmers' and Housekeepers' Week, January 4-9, 1915
Farmers' Congress, January 8-9, 1915
First Semester closes Saturday, January 16, 1915
First Term School of Agriculture closes Saturday, January 16, 1915
Second Semester begins Monday, January 18, 1915
Second Term School of Agriculture begins Monday, January 18, 1915
Lincoln's Birthday Exercises, Friday, February 12, 1915
Washington's Birthday Exercises, Monday, February 22, 1915
Mid-Semester Report, March 26, 1915
Special Examinations for Removal of Conditions, March 27, 1915
School of Agriculture closes Friday, April 2, 1915
Spring Vacation, April 4-10, 1915
May Day Carnival, Saturday, May 1, 1915
Examination for Battalion Officers for the ensuing year, Wednesday, May 5, 1915
College Day, Friday, May 14, 1915
Baccalaureate Sermon, 8 p. m., Sunday, May 30, 1915
Memorial Day, Monday, May 31, 1915
Commencement Exercises of Literary Societies, 8 p. m., Monday, May 31, 1915
Junior Class Day Exercises, 8 p. m., Tuesday, June 1, 1915
State Board of Agriculture meets Wednesday, June 2, 1915
Senior Class Exercises, Wednesday, June 2, 1915
Commencement Exercises, Thursday, June 3, 1915
Reunion of Alumni, 8 p. m., Thursday, June 3, 1915
Second Semester closes Thursday, June 3, 1915

First Semester (1915-1916) begins September 2, 1915

Summer School opens June 15, 1914.
Summer School closes July 26, 1914.

THE STATE BOARD OF AGRICULTURE

HON. FRANKLIN E. BROOKS	Colorado Springs, 1915
HON. WILLIAM HARRISON	Clifton, 1915
HON. J. S. CALKINS	Westminster, 1917
HON. JOHN C. BELL	Montrose, 1917
DR. R. W. CORWIN	Pueblo, 1919
HON. CHAS. PEARSON	Durango, 1919
HON. A. A. EDWARDS	Fort Collins, 1921
MRS. J. B. BELFORD	Denver, 1921
PRESIDENT CHAS A. LORY	Ex-officio
GOVERNOR E. M. AMMONS	

OFFICERS

HON. A. A. EDWARDS	President
HON. J. C. BELL	Vice-President
L. M. TAYLOR	Secretary
T. S. JONES	Treasurer

EXECUTIVE COMMITTEE

A. A. EDWARDS J. S. CALKINS E. M. AMMONS

THE STATE BOARD OF AGRICULTURE

The State Board of Agriculture was created by the General Assembly in 1879. It consists of eight members appointed by the Governor of the State, the Governor of the State, and the President of the State Agricultural College, who are members, ex-officio. The governor, by and with consent of the senate, on or before the third Wednesday of January of each biennial session of the general assembly, appoints two members of the board to fill the vacancies that next occur, to serve for a term of eight years.

Originally, the board was created to have general control and supervision of the State Agricultural College, and of the lands which may be vested in the college by the general assembly of the state or by the national congress, and of all appropriations made by the state, and by the national government, for the support of the institution.

The duties of the board have, from time to time, been increased by the general assembly; not only does it now act as the board of control of the State Agricultural College and the Agricultural Experiment Station, and of the secondary school of agriculture, maintained at the college, the so-called Colorado School of Agriculture, but the Eighteenth General Assembly also made it the board of control of the secondary schools of agriculture at Fort Lewis, near Durango and at Grand Junction, on properties, formerly Indian schools, that were turned over to the State of Colorado by act of Congress, March 3, 1909. The Seventeenth General Assembly created the State Fair Board, consisting jointly of the State Board of Agriculture and the State Board of Horticulture; and the Eighteenth General Assembly gave to the State Board of Agriculture the powers of a State Board of Forestry, and the Nineteenth General Assembly repealed the laws pertaining to the State Board of Horticulture and vested all the powers of this board in the State Board of Agriculture.

OFFICERS OF ADMINISTRATION, AND THE FACULTY

CHAS. A. LORY, M. S., LL. D. (University of Colorado), President — Residence, Campus

S. ARTHUR JOHNSON, M. S. (Rutgers), Associate Professor of Zoology and Entomology, and Dean of the Faculty — 612 Elizabeth Street

VIRGINIA H. CORBETT, B. L., M. Ph. (Iowa State College), Associate Professor of History and English, and Dean of Women — 426 Garfield Street

CLARENCE P. GILLETTE, B. S., M. S. (Mich. Agr. College), Professor of Zoology and Entomology, and Director of the Agricultural Experiment Station — 620 Elizabeth Street

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ALBERT CAMMACK, M. E. (Iowa State College), Assistant Professor of Mechanical Engineering 409 Mathews Street

FRED J. RANKIN, B. M. E. (Univ. of Kentucky), Associate Professor of Electrical Engineering 522 Remington Street

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S. B. NUCKOLS, B. S. and A. M. in Agriculture (Univ. of Missouri), Assistant Professor of Agronomy 322 Garfield Street

---

*Deceased

INSTRUCTORS AND ASSISTANTS

BARLOW, FLORENCE M., B. S. (Mich. Agricultural College), Instructor in Home Economics
633 S. Howes Street

BRADLEY, R. A., Assistant in Shop Work
301 Whedbee Street

BURNETT, WILLIAM L., Curator of the Museum
525 S. Howes Street

CARPENTER, CHARLOTTE E., Instructor in Home Economics
639 S. College Avenue

CRAIG, ELEANOR, Ph. B. (Univ. of Chicago), Instructor in History and English
407 S. College Avenue

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*DILLON, MORRIS, N., B. A. (Earlham College), Secretary to the President
637 S. Howes Street

*ERDMANN, JULIUS (College of Horticulture, Roestritz, Germany), Gardener and Instructor in Floriculture and Landscape Gardening
Fort Collins, S. E.

FRISBEE, JEROME B., B. S. A. (Iowa State College), Instructor in Farm Mechanics
809 Whedbee Street

*GILBERT, G. A., B. S. (Mich. Agr. College), Instructor in Dairying and Animal Husbandry
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641 Remington Street

GOEDER, FRANK P., B. S. (C. A. C.), Instructor in Physics
504 Remington Street

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320 W. Myrtle Street

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322 Garfield Street

*HERTWIG, RAYMOND, B. S. (Purdue Univ.), Instructor in Chemistry
629 S. Howes Street

HIGGINS, MARION V. (Kansas State Normal and State Normal at Moorhead, Minnesota), Assistant Librarian
600 Remington Street

HUGHES, H. W. (Univ. of Oklahoma), Physical Director
1020 S. College Avenue

LIST, GEORGE M., B. S. A. (Purdue Univ.), Deputy State Entomologist, and Instructor in Entomology
628 Mathews Street

McGINTY, R. A., B. S. (Alabama Polytechnic Institute), Instructor in Horticulture
510 S. Howes Street

PECK, LOUISE, A. B. (Simpson College), Instructor in Home Economics
811 Peterson Street

ROBINSON, R. J., Assistant in Foundry
Denver, Colorado

ROSS, S. I., B. S. (M. E.) (Oklahoma A. & M. College), Instructor in Mechanical Engineering
629 S. Howes Street

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*Resigned

SEAMANS, H. L., A. B. (Fairmount College), Y. M. C. A. Secretary, and Assistant in English — City Y. M. C. A.

UPSON, MRS. C. AGNES, Assistant Director Physical Training, in Charge of Physical Training for Women — 527 Remington Street

*VAPLON, W. E., Poultryman, and Instructor in Animal Husbandry — College Farm

WESTFALL, ALFRED, A. B. and A. M. (Park College), Instructor in English — 629 S. Howes Street

WILSON, H. J., Instructor in Carpentry — 624 S. College Avenue

CONSERVATORY

EMSLIE, ALEXANDER, Director C. A. C. Conservatory of Music — 644 Peterson Street

EMSLIE, MRS. ALEXANDER, Directress of Piano Department — 644 Peterson Street

REYNOLDS, HOWARD S., Teacher of Violin and Harmony — Y. M. C. A.

HAMILTON, CARRIE, Assistant Teacher of Vocal and Public School Music — 619 S. Sherwood Street

GRIFFITHS, LULU, Assistant Teacher of Piano — 725 Mathews Street

CLARK, BERTHA, Accompanist — 428 S. Howes Street

FOLTZ, BENNETT W., Instructor in Cornet — 600 Mathews Street

RUNGE, W. E., Instructor in Clarinet, and Leader of the Military Band — 726 S. College Avenue

FACULTY COMMITTEES

Executive

S. Arthur Johnson
J. W. Lawrence
George H. Glover
B. F. Coen
S. L. Macdonald
T. M. Netherton
Alvin Keyser
Virginia H. Corbett

Social

Virginia H. Corbett
W. W. Robbins
I. E. Newsom
Inga M. K. Allison
T. M. Netherton

Catalogue

B. F. Coen
L. D. Crain
B. O. Longyear

Athletic

S. L. Macdonald
Albert R. Cammack
H. W. Hughes

Advanced Degrees

Wm. P. Headden
J. W. Lawrence
W. R. Thomas

Class Proctors

Freshman
B. F. Coen

Sophomore
Margaret E. Durward

Junior
Fred G. Person

Senior
Alvin Keyser

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*On leave of absence

THE MISSION OF THE AGRICULTURAL COLLEGE

The mission of the Agricultural College as defined by the Congressional act which called it into being is "to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." This class of educational institutions had its origin in the provisions of an act of Congress, approved July 2, 1862, and popularly known as the "First Morrill Bill"; and for its establishment and maintenance in each state which availed itself of the provisions of the law, a donation of 30,000 acres of land for each senator and representative in Congress was made, Colorado receiving 90,000 acres. The sales of this land, and the revenue therefrom, constitute a permanent endowment fund.

In 1890, Senator Morrill, of Vermont, secured the passage of a second act, known as the "Second Morrill Bill," appropriating a maximum of $25,000 (the Morrill fund) annually for the support and maintenance of these colleges, which act was recently amended so that the maximum sum would be $50,000 a year. This maximum was reached in 1911. This act also made certain provisions as to the line of studies for which this money might be expended, enacting that it should be used "only for instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic sciences." This act has been construed by the National Commissioner of Education, in a circular approved by the Secretary of the Interior, and prescribes the studies which these colleges may teach in order to avail themselves of the benefits of the law.

By acts approved January 27, 1879, and April 6, 1891, the general assembly of Colorado gave "full and complete acceptance, ratification and assent" to "all of the provisions, terms, grants, and conditions and purposes" of these congressional acts, thus creating a perpetual contract between the state of Colorado and the government of the United States under the terms of which, in consideration of the grant of 90,000 acres of land for the creation of an endowment fund, and the payment of the

Source of Irrigation Waters

Morrill fund annually, the state bound itself to maintain an institution at which instruction should be given in military tactics, agriculture, mechanic arts, the English language, economics, and the various branches of mathematical, physical, and natural science.

The requirements of this contract, both in letter and spirit, are being faithfully observed, and the duties it imposes are being fully performed by the Colorado Agricultural College.

Experiment Station.—The colleges established under the Morrill bill were soon confronted by the necessity of doing experimental work and original research in agriculture to supplement and extend the agricultural knowledge of the times. This need was recognized by Congress and was met by the establishment of the experiment stations in an act approved March 2, 1887, generally known as the Hatch Act. This act appropriated $15,000 annually—the Hatch fund—(no part of which could be expended for instruction) for research, investigation, and experiment along the lines of agriculture, horticulture, and animal husbandry, and in the arid states the water problems which arise out of their systems of irrigation. The results of these investigations and of the practical experiments made are published in the station bulletins issued from time to time as the investigations are completed. The bulletins that have been issued from this station cover a wide range of industrial topics, and are among the most notable and valuable contributions that have been made to the science of agriculture.

In 1906, Congress supplemented this "Hatch fund" of $15,000 a year by another, which has become known as the "Adams fund." In accordance with the provisions of the law, the experiment station received $5,000 in 1906, and was to receive a sum increased by $2,000 each year until the total reached $15,000 annually. This money is exclusively for the work of original research, and the restrictions placed about its use are both narrow and severe.

It is well, perhaps, that this is so, since the results of the careful and intelligent expenditure of this sum—$30,000—by every experiment station in the land promise the elevation of agriculture to its true place among the great industrial sciences, and to reveal and determine for the stockman, farmer, and the fruit grower, many facts and problems which will have an important bearing upon all future products of the soil.

Extension Work.—Another function of the Agricultural College is Extension Work, that is, carrying the work of the college to the people. This is done by means of farmers' institutes and short courses held at various central points in many sections of the state, and by means of information bulletins. The institutes are from one to three days duration. The short courses occupy an entire week, and permit a more continuous and detailed presentation of the practical topics discussed by expert lecturers and professors. The leading topics presented at these institutes and short courses vary with the leading form of industry in the locality where they are held. If it be farming purely, then the subjects presented relate especially to field crops; if it be fruit growing, then subjects which concern the orchard and garden; if it be stock growing, then subjects which bear upon animal husbandry.

The work of the rural school and country life generally is given special attention. Rural school visitors co-operate with county superintendents and teachers in developing courses in agriculture and household arts for the rural schools.

The beneficial effects of this extension work are already felt and are generally acknowledged in Colorado. To the practical information imparted, the timely hints given, the valuable suggestions made by the Agricultural College experts at these institutes and short courses, many individuals—whole communities even—owe improved methods and more prosperous conditions.

Functions and Income.—These, then, are the three functions of the Colorado Agricultural College: Education, experimental work and original research, and the extension of the knowledge thus gained to the homes of the people. To enable the college to fulfill its mission, the national government contributes the Morrill fund in addition to the permanent land grant funds for educational work, while the state provides an income of .06822 of a mill on the assessed valuation, and legislative appropriations are made for specially designated purposes.

For experiment station work, the national government contributes the Hatch and Adams funds, while the state provides for special investigations by legislative appropriations.

For extension work, a special appropriation is made by the state legislature.

CAMPUS

Standing upon the campus of the Colorado Agricultural College, the visitor is readily impressed with the spirit and purpose of the institution as he gazes with delight upon the scenes by which he is surrounded. Near at hand are the main administration building, in

Hydraulic Laboratory **Residence Farm Superintendent**

whose various additions may be read the growth of the college and its need for more room; the chemical, the electrical, the home economics, and the horticultural buildings, the library, and the mechanical engineering building, whence comes the buzz of machinery, enlivened by a real anvil chorus.

To the south, across the women's athletic field, rises agricultural hall, to the west of which is the residence of the president of the college, and in the southwest of the campus, towering above the trees, the barns with their thoroughbred cattle, and sheep, and swine. Nearby are the new poultry yards and the cottage of the care-taker. Directly to the west, rise the white walls of the new irrigation building, all the more perfectly outlined by the dark blue foothills which seem to rise directly behind. Just beyond stretches the highly cultivated college farm of 320 acres, while along the immediate base of the foothills is the great pasture field of 1,350 acres.

Half a mile to the east of the campus, are the barns and paddocks of the Government Horse Breeding Station.

Such is the campus and plant of the college, whose environs constitute one of the most beautiful and attractive agricultural landscape views to be found in the West—the highly cultivated prosperous valley of the Cache La Poudre, with its farms and gardens, its orchards, canals and reservoirs, a region where agriculture by irrigation has reached its highest and most progressive development. No more commanding or appropriate location could have been chosen for an agricultural college.

Nor should mention be omitted of Fort Collins, in the suburbs of which the college is situated; a growing, thriving city, which reflects in its commercial, social, educational, and religious life, the best elements of modern American civilization; a city in which no saloons or other vicious resorts are tolerated; which takes a just pride in the college and its work; which extends a cordial welcome to students and throws about them the most wholesome influences, and which so conducts its municipal affairs as to make it an ideal college town.

Such is the Colorado Agricultural College; such its equipment and

Administration Building from the North

appointments; such its location and environment, which combine to reflect the spirit and purpose which pervade its halls and give zest and inspiration to the instruction therein given. Sharing in its advantages and the opportunities that it assures, is the free gift that is now proffered to the boys and girls of Colorado. To those who avail themselves of its privileges, may be guaranteed a thorough training in any of the industrial arts which come within its scope, a broad and generous culture, a higher plane of citizenship, a clearer vision of life's ideals, whose influences conduce to more perfect types of manhood and womanhood, to a more prosperous commonwealth, a greater republic, a larger measure of individual independence and happier homes.

BUILDINGS

Main College Building.—The largest building on the grounds. It contains offices of the President, Principal of School of Agriculture, Secretary, Dean, Registrar, Superintendent of Extension Work, Rural School Visitor, Physical Director, Commandant, and Young Men's Christian Association; offices and classrooms of the Departments of English and History, Mathematics, and Modern Languages; an auditorium with opera chairs for seating 900 persons, and an armory, 40x72 feet, a gymnasium, and a laboratory used by the Department of Physics and Electrical Engineering.

Chemical Building.—This building contains the professor's suite of rooms, including private laboratory and balance room; two student laboratories, with a total of 208 individual lockers, allowing 56 students to work at the same time; a lecture room for chemistry, and one for geology, a museum of rock and mineral specimens, and the chemical laboratories of the Experiment Station.

Electrical Engineering Building.—A very serviceable building whose three floors provide offices, classrooms, and work rooms for instruction in physics and in electrical engineering.

Administration Building from the South

Conservatory of Music.—This is a small but very attractive building with two floors, containing classrooms, offices, and a reception room.

The Hall of Household Arts.—This handsome building, the gift of Senator Simon Guggenheim, is almost entirely occupied by the Department of Home Economics. The building as a whole contains about twenty rooms. The first floor is given over to offices, the departmental library, food laboratories, dining-room, locker-room, and laundry. On the second floor are the office of the Dean of women, rest-room, headquarters of the Young Women's Christian Association, assembly room, sewing laboratories, and lecture rooms. The spacing and equipment provide adequately for individual work.

Horticultural Hall.—A well constructed and artistically designed building, with offices, classrooms, and laboratories for departments of horticulture, botany, and forestry, and a well equipped laboratory for bacteriological research that is being conducted under the Adams act.

Mechanical Engineering Building.—One of the largest buildings on the grounds. It contains offices and classrooms for the various classes needed in a thorough course in mechanical engineering, a machine shop, well supplied with the tools and apparatus needed for instruction in large classes in all lines of machine work; a modern blacksmith shop, with 42 forges and other equipment; a foundry, with full equipment for thorough instruction work with iron, brass, and bronze; a bench and wood-working room, with 47 benches and full sets of tools, wood-working machinery, including power planers and lathes; and a department library of 1,000 volumes.

Mechanical Engineering Laboratory.—This laboratory is furnished with apparatus and machines to give advanced students an opportunity to make investigations of the materials used in constructing buildings and machinery, and to make tests of boilers, engines, pumps, motors, and other mechanical appliances. A special feature is an extensive equipment for investigations along the lines of steam engineering and compressed air.

Mechanical Engineering Building

Civil and Irrigation Building.—This building is one of the best on the campus, new and modern in every way. In the basement are found the irrigation and hydraulic laboratories with all the equipment for experimenting with flowing water, with pumps, meters, etc. The cement laboratory and photographic dark rooms are also on this floor. The floor above, contains the experiment station offices, museum, and instrument room. On the second floor are the classrooms, departmental library, and offices of the professors of the department. The third floor is devoted to the draughting work. With its ceiling light, the blueprint apparatus, tables and filing cases, it makes an up-to-date room for this kind of work. The building cost $75,000, and it is said to be one of the best equipped buildings in the United States for teaching irrigation.

Agricultural Hall.—An attractive building, with three working floors, containing offices, classrooms, and libraries for the departments of agronomy and animal husbandry, and offices for the horse specialist of the U. S. Department of Agriculture, and for the poultryman, and a large room well equipped for instruction in farm dairying.

Judging Pavilion.—Two classrooms, with side and overhead lighting, for instruction in judging horses, cattle, hogs, sheep, and poultry. This building was planned after a study of all the better buildings of its class in the United States, and is exceptionally well adapted for the work.

Greenhouse and Forcing Houses.—These are connected with Horticultural Hall and consist of two structures. One is for the use of students in propagating ornamentals, bedding stock, and for gardening under glass; and the other, modern in plan and detail, embraces the best that is known in greenhouse construction.

Veterinary Buildings.—The main offices of the Division of Veterinary Medicine are located in the Civil and Irrigation Engineering building as are also the Pathology museum, and two classrooms. A group of five buildings facing on Laurel street furnishes accommodations for

Civil and Irrigation Engineering Building hospital, pathology laboratory, pharmacy laboratory, dissecting room, small animal ward, classrooms, offices, etc.

Farm Buildings.—The college has large and well-planned barns for breeding horses, work horses, and dairy cattle; sheds for fattening cattle, a sheep barn, a large piggery, and several styles of individual hog houses; a plant for fattening 100 hogs at a time, a large farm machinery shed, farm blacksmith shop, a number of model poultry houses, and an incubator room.

Farm Mechanics.—This building is devoted to classrooms and laboratories for instruction in operating, repairing, setting up, adjusting, and testing farm machinery, and steam traction and gasoline engines. The equipment is valued at $15,000.

Library.—This building furnishes stack room for 40,000 bound volumes, 50,000 unbound pamphlets and bulletins, storage and filing rooms, office for librarian and assistants, and a general reading room.

Zoology Building.—A two-story structure of white stone, providing classrooms, laboratories, and offices for instruction and investigation in entomology and other branches of biology; a museum, an insectary, and a heating plant for the building and for the Irrigation Engineering building.

Hydraulic Laboratory.—A special laboratory designed for advanced studies in water measurement, flow through conduits, etc, and used in co-operation with the "Irrigation Investigation" Office of Experiment Stations U. S. Department of Agriculture.

EQUIPMENT

The equipment of the college is such as is needed to give thorough instruction in agronomy, animal husbandry, horticulture, entomology,

Veterinary Buildings

forestry, civil, irrigation, electrical, and mechanical engineering; home economics; general science and veterinary medicine.

The value of the apparatus, instruments, machines, books, and live stock exceeds $150,000.

Geological Museum.—The material is unusually complete, representing all the important classes and varieties of rocks, a good working collection of the important rock-forming minerals, a collection of sections showing the microscopic structure and optical properties of various classes of rocks, a large and representative collection of ores, a beautiful collection of ornamental mineral materials and a collection of fossils and casts illustrating the life of every geological period.

Biological Museum.—Contains a collection of over 75,000 specimens of insects, a large collection of vertebrate and invertebrate animals, hundreds of charts and models, an extensive series of prepared microscopic slides, wax models showing the development of the frog, chick, and man, human skeletons, a manikin of the human body, and enlarged models of special parts of the body.

Pathology Museum.—The Pathology museum contains over 500 specimens of diseased organs and tissues of the domestic animals, and approximately 200 specimens of parasites that infest the domestic animals. These specimens are of inestimable value in teaching parasitology, physiology, pathology, and other branches pertaining especially to veterinary medicine.

Farm Equipment.—The herds of pure bred animals and the farm machinery, implements, tools, and dairy apparatus used for instructional purposes in agriculture are worth over $40,000.

Farm.—The college has 472 acres of land under irrigation, and 1,350 acres in pasture. The college farm affords an unusual opportunity for the study of practical farm and garden irrigation and modern farm management.

Guggenheim Hall Entomology Building

The U. S. Department of Agriculture and the College Experiment Station are jointly conducting an experiment in developing a superior type of American carriage horse. This experiment is attracting world-wide attention. The work is being conducted on the college farm, and students have the opportuniy and are required to study its progress. There are 92 choice carriage horses and colts now being used in this investigation, with model barns, sheds, paddocks, stable, and harness equipment.

Experiment Station.—The Agricultural Experiment Station of the college has a large and carefully selected equipment for investigation and research in soils, crops, stock feeding, plant and animal breeding; soil, plant and animal diseases; fruit and vegetable growing; insects, and irrigation problems; and is yearly spending $30,000 and upwards in practical investigations under Colorado conditions along these lines. **A study of the equipment and methods used in this work and of the results obtained is of inestimable value to advanced and graduate students.**

Shops and Laboratories.—The equipment used in class and laboratory work in mechanic arts, which includes civil, irrigation, electrical, and mechanical engineering, is worth $55,000.

COURSES OF STUDY

College Courses.—Courses in Agriculture, Mechanic Arts, Veterinary Medicine, Home Economics, and General Science are offered for high school graduates, or for those having equivalent preparation. In agriculture the opportunity is given for specializing in agronomy, animal husbandry, entomology, forestry or horticulture. In home economics the opportunity is given for specializing in domestic art or domestic science. In mechanic arts, the opportunity is given for specializing in civil and irrigation engineering, electrical engineering or in mechanical engineering.

Secondary Courses.—Three year courses of six months each, in agriculture, mechanic arts, and domestic science, are offered by the **School of Agriculture**, conducted by the college for grammar school (eighth grade) graduates at least fifteen years of age, or for those having equivalent preparation. **Students who have completed the work offered in the School of Agriculture may enter the college after taking the intermediate year, which is offered for just that purpose in connection with the School of Agriculture.** Full description of these courses is given in the special **School of Agriculture catalogue**, which will be mailed upon request.

One Week Courses.—In January of each year, the college offers one week courses for farmers and housekeepers, open to all who wish to attend. These courses are under the direction of the Extension Department and consist of special lectures and demonstrations with evening lectures on topics of general interest. Farmers' and Housekeepers' week for next year opens January 4th, 1915. Special circulars will be mailed on request.

ENTRANCE REQUIREMENTS FOR COLLEGE COURSES

Students are admitted to the college either upon certificates from an accredited high school or upon examination.

Certificates from schools not accredited will be considered as the merits of each case may warrant. Students presenting a less number of credits than are required for college entrance may enroll in the School of Agriculture.

Applicants appearing late in the college year will be required to pass, in addition to the entrance examination, a further examination in the work already passed over by the students.

Fifteen units are required for admission. Students presenting more than fifteen credits required for entrance may, in certain cases, receive credit toward graduation, for the extra work done. Students may be admitted on condition, with fourteen units, the condition to be made up during the first year. A unit course of study is defined as a course covering a school year of not less than thirty-five weeks, with four or five (preferably five) periods of at least forty or forty-five minutes each, a week. The fifteen units for entrance are divided as follows:

Mathematics	2
English	3
History	2
Science, Chemistry, 1; Physics, 1	2
Elective	6

Students in Veterinary medicine not presenting four units in English will be required to take five hours of Freshman English throughout the year.

Electives may be chosen from the following: Mathematics, 2; Ancient Languages, 4; French, 3; German, 3; Spanish, 2; History, 2; English, 2; Science, 2; Drawing, 1; Psychology, 1; Political Economy, 1; Shop Work, 2; Agriculture, 2; Domestic Science, 2; (Other electives offered will be considered by the faculty.)

Students who elect engineering must present credits in solid geometry or register for the same in the freshman year.

The following High Schools are Accredited:

Alamosa High School
Appleton Consolidated High School (Grand Junction)
Arvada High School
Aspen High School
Berthoud High School
Boulder High School
Breckenridge High School
Brighton High School
Brush High School
Cache La Poudre Consolidated School (La Porte)
Canon City High School
Carbondale High School
Central City High School
Cheyenne County High School
Cheyenne (Wyoming) High School
Colorado City High School
Colorado Springs High School
Cripple Creek High School
Del Norte High School
Delta High School
Denver High School (East)
Denver Manual Training High School
Denver High School (North)
Denver High School (South)
Denver High School (West)
Douglass County High School
Durango High School
Eaton High School
Florence High School
Fort Collins High School
Fort Morgan High School
Fowler High School
Fruita High School
Georgetown High School
Glenwood Springs High School
Golden High School
Grand Junction High School
Greeley High School
Gunnison County High School
Holly High School
Hotchkiss High School
Huerfano County High School
Idaho Springs High School
Julesburg High School
Lafayette High School
Lamar High School
Las Animas High School
Leadville High School
Littleton High School
Logan County High School
Longmont High School
Louisville High School
Loveland High School
Manitou High School
Monte Vista High School
Montrose County High School
Mount Lincoln High School (Palisade)
Ouray High School
Palisade High School
Paonia High School
Phillip County High School
Pueblo High School, District No. 1
Pueblo High School, District No. 20
Rifle Union High School
Rio Blanco County High School
Rocky Ford High School
Saguache County High School
Salida High School
Silverton High School
South Canon High School
Trinidad High School
Telluride High School
Union High School, No. 1 (La Junta)
Victor High School
Wheat Ridge High School (Alcott)
Windsor High School
Miss Wolcott's School (Denver)
Yuma County High School (Wray)

GENERAL INFORMATION

Requirements for Graduation.—One hundred and sixty credits are required for graduation in all courses, of which six must be in military drill for men, or in gymnasium for women. In agriculture, mechanic arts, home economics, and general science, twenty to thirty credits are elective.

A Credit Defined.—One credit is given for one hour of lecture, or recitation work a week, or two hours in the laboratory, or three hours drill or gymnasium, carried satisfactorily throughout a semester.

Grades.—The passing grade is 70 per cent. All students who fail to make a standing of 60 per cent will be considered "failed," and will be required to take such subjects over again in class. Those making a standing of more than 60 per cent and less than 70 per cent will be considered "conditioned," and will be allowed one special examination before the subject is again taught, by which they may try for a passing grade of 70. In cases of studies extending over more than one semester, the student, if he has an average of 60 per cent, may be allowed to continue with his class, but must finally make a grade of 70 per cent in one special examination in each semester. If he falls below 60 per cent in average at the end of a semester, he will be dropped from the class and be required to take a lower subject.

Any student who shall have a semester standing of 90 per cent may be exempted from examination, and in that case his class standing shall be his semester average.

In order to encourage students to do the best work of which they are capable with a limited number of credit hours, rather than undertake to carry a larger number of credit hours with a lower grade, the faculty considers not only the number of hours the student takes, but the grade received in the different subjects.

In order to do entire justice to the needs of the students, instruction is adapted to the students of average ability. Those who will devote their best efforts and do superior work, will not only get more, but they will receive recognition for the same in additional credit.

For each credit hour for which the grade	70 to 75 is given,	10 per cent is deducted.
	76 to 85 is given,	no change in credits is made.
	86 to 90 is given,	5 per cent is added.
	91 to 95 is given,	10 per cent is added.
	96 to 100 is given,	15 per cent is added.

Campus in Winter

Entrance Conditions.—All entrance conditions must be removed the freshman year.

Degrees.—The degree of Bachelor of Science is conferred upon the graduates of all courses except those in Veterinary Medicine. Graduates in this course receive the degree of Doctor of Veterinary Medicine.

Unclassified Students and Special Courses.—Unless there are strong and excellent reasons for it, a student will not be allowed to take a special course of study; and, in case it is allowed, the student must show that he is well qualified to pursue the studies selected by passing such examinations as the faculty may assign. No student will be allowed to change his course during the progress of the semester, nor will he be allowed to drop a study unless by permission of the Executive Committee.

All applications for special courses of study must be made to the chairman of the Executive Committee by mail or otherwise, at least two days before the opening of the semester. Except under unusual conditions, it will be useless for any person to apply for a special course of study involving less work than is required of the students in the regular course.

Unclassified students who wish to become candidates for a degree, must fulfill all requirements for admission to the college, and must complete the required work in the regular manner.

Special Work For Those Who Desire to Train Themselves to Become Teachers.—In order to meet the growing demand for teachers of Agriculture, Mechanic Arts, Household Arts, and of the sciences closely related thereto, the technical courses of the college are supplemented by work in Psychology, History of Education, Theory and Practice of Teaching; and provision is made for practice teaching in the School of Agriculture, under competent supervision. This work satisfies the State Certification Law, which requires "professional training equivalent to at least one-sixth of a standard four years' college course

Battalion in "A" Formation

in at least three of the following groups of subjects, one of which shall be Practice Teaching, to wit:

1. General Educational Psychology
2. History of Education
3. Science and Principles of Education
4. Practice Teaching and Special Methods
5. Organization and Management of Schools
6. Philosophy, Sociology, and Anthropology

State diplomas granted under the provisions of this act entitle the holders thereof to teach in the public schools of any county, city, town or district in the state without the necessity of any other examinations for a period of five years, unless sooner revoked by the State Board of Education." The diploma may be renewed at the end of five years, and later may be made a life certificate.

There is an opportunity for teachers of experience to come to the college and fit themselves for more advanced positions, or for specializing in Agriculture, Mechanic Arts, and Household Arts, and earn part of their expenses by teaching one or more classes in the School of Agriculture. Special provision is made for students who have taken their professional training in other institutions of higher learning, especially the State Teachers' College of Colorado or the College of Education at the University of Colorado, and desire the technical training necessary to fit themselves as teachers of Agriculture, Mechanic Arts, or Household Arts.

Senior Standing.—At the beginning of the senior year, each member of the senior class, before he will be considered a candidate for graduation, must show the faculty in what way it will be possible for him to make the required credits.

Arriving at the College Depot

If, at the time of the mid-semester report of the second semester, a candidate for graduation shall have more than the regular number of hours yet to do, he shall no longer be considered eligible for graduation.

Advanced Standing.—Students entering the Agricultural College from other institutions, of higher learning, that require fifteen units for admission, will be given standing according to the following rules:

1. If such applicant has pursued a regular course of study at the former institution and completed the work taken, he will be given standing with the same class at this institution, and be required to complete work here at the rate of twenty credits for each semester's work yet to be done, but no student will be recommended for a degree who does not present credits for all the required work leading to such degree.
2. Students, coming from other institutions, who have not pursued a regular course of study at such institutions or who have not satisfactorily completed the work so far taken, will be given credit hour for hour for the work, completed and presented, in so far as that work applies to the course of study desired.

Graduate Work.—Opportunities for graduate work are offered in the following lines of scientific research: Hydraulics—including Irrigation and Drainage Engineering—Chemistry, Bacteriology, Mycology, Entomology, Plant Breeding, and High Altitude Agriculture. Students having a bachelor's degree, who have prepared themselves for advanced work may become candidates. Two years are required for an M. S. degree, over and above the regular requirements for the degree of B. S. At least one year must be taken at this institution.

One major and two minor lines of study are required. The major line of work is so planned as to articulate with investigations being carried on by the Experiment Station and will afford the best possible training to prepare the student for good positions in the agricultural colleges and experiment stations of this and other countries.

This work is offered in the nature of a scholarship, the value of which is dependent on the time given as laboratory assistant.

Students may matriculate at any time, preferably in May or June, for most lines of work.

Full information will be sent on request.

Scholarships.—Two scholarships are awarded annually to each accredited high school of the state, one to a boy, the other to a girl. The scholarship is good for four years from date of award. It is not transferable and cannot be extended except by special vote of the Executive Committee of the State Board of Agriculture. Besides the honor it confers, it has the cash value of $40, payable $10 annually, in the remission of fees. The award is made upon the recommendation of the Principal of the High School and the City or District Superintendent of Public Instruction.

Registration.—Tuesday, September 1, and Wednesday, September 2, 1914, are devoted to examination and registration. New students will be met at the trains by committees of young men and women from the Young Men's and Young Women's Christian Associations, who will take them to the college at once for registration, and will assist them to find good homes and open for them the doors of college life. Students who fail to register on the dates set for registration will be charged an additional registration fee of $2.00.

Classes in Elective Subjects.—No class in an elective subject will be formed for less than four students.

Chapel.—All students assemble twice a week, Mondays and Thursdays, at 9:50, in the auditorium of the main building, for chapel exercises. At the beginning of the year, seats are assigned. Attendance is required.

Tuition and Fees.—Tuition in all the regular classes of the college is free, but fees are charged in the Conservatory of Music, and of each veterinary student whose home is not in Colorado, a non-resident fee of $25.00 is charged.

Entrance Fee.—An entrance fee of $5.00 is required of every student, $2.00 of which is the library fee, and $3.00 of which will be paid by the Registrar to the Treasurer of the Athletic Association upon the written statement of the Secretary of the Association that the student has signed the constitution.

Laboratory fees are charged in certain courses to help defray the cost of materials used. These fees are stated in connection with the description of the different courses.

By unanimous vote, the Associated Students passed a resolution that $5.00 be collected, in addition to the regular registration fee, from each student; $1.00 to pay the annual subscription to the Rocky Mountain Collegian, and $4.00 to pay for a season ticket to all athletic events except the annual athletic smoker.

Graduation Fee.—By a resolution of the State Board of Agricul-

The Lily Pond

ture, passed in June, 1912, each student who has been recommended to the Board to receive a degree, must, before the degree is conferred, pay a graduation fee of $5.00, or if the degree is conferred in absentia, $10.00.

Estimate of Expenses.—A conservative estimate of the necessary expenses of a student for a year in the institution is as follows:

Board	$125.00
Room	48.00
Books	25.00
Fees	12.00
Incidentals, including uniform for men, or gymnasium suits for the girls	90.00
	$300.00

About one-fifth of the students earn one-third of their expenses.

Homes for Women Students.—Desirable room and board for the young women who attend the college, are secured from among the best homes in Fort Collins. They are all under the supervision and regulation of Dean Virginia Corbett, who is the adviser of college women on all matters pertaining to their home life. Only women students are received in these homes reserved for the college girls, and reasonable regulations which will insure proper home environment for students are insisted upon.

Boarding Clubs.—A number of boarding clubs for men have been organized and are managed by the students. In these clubs, board may be obtained for from $13.00 to $15.00 a month. Well furnished rooms, lighted, heated, and cared for, may be had at $1.25 per week.

The San Juan Club.—The San Juan Club is an incorporated boarding club, for male college students. Membership is secured by application to the president or steward. On payment of $1.00, together with a reserve deposit of $5.00, board is obtained at the rate of $14.00 a month, payable in advance. The San Juan Club was organized in 1892, and was incorporated under the laws of Colorado in 1903.

Private Board.—Students can secure lodging and board in excellent private families at from $20.00 to $30.00 per month. The college authorities are gratified to be able to announce that many of the best homes in Fort Collins are thus opened to students at reasonable rates. No one can estimate the influence of home life afforded the young student who is away from home for the first time.

To those who desire to board themselves, ample and reasonable opportunities are afforded.

The Osgood Fund.—Through the generosity of Mr. John C. Osgood, a loan has been provided for worthy students in the Division of Agriculture. The fund is administered by a committee consisting of the President of the College, the Secretary of the Board of Agriculture, and the Chairman of the Division of Agriculture, and is doing noble service in aiding needy students.

College Day.—A day is set aside each year when all students of the college may take a "day off," and go for a good time into the country. In May, 1913, a special train was chartered and the whole college family was taken up into the mountains for an all-day picnic. For the year 1914-15, College Day will be celebrated on May 14. The students and faculty, alike, look forward to this time with great expectation.

Student Labor.—The college is an employer of student labor to a limited extent. In the year just closed our students received $3,500 in payment for work done on the college grounds. It is the policy of those in charge of the different forms of college work, to favor students whenever labor service is needed. The best qualified and most willing have the preference, if more service is offered than required.

Conduct.—"The college authorities assume that the students are manly men and womanly women and that they come here earnestly desirous of preparing themselves for useful and honorable careers in life. The aim of the faculty is to lead students to cultivate habits of steady application, self-control, a high sense of honor, truthfulness, and an interest in maintaining the purity of the moral atmosphere of the institution. By common consent, students do not smoke on the campus. Those who are not disposed to support heartily a sentiment of this kind should not apply for admission."

Boarding Train for College Day Picnic

Hazing.—Extracts from the Session Laws of Colorado, of 1907, page 337:

"It shall be unlawful for any person to engage in any of these (those) practices commonly called 'hazing,' or in any acts of torturing, tormenting, or in any way maltreating a fellow inmate, employee, or student.

"Any person found guilty of the violation of the provisions of the first section of this act shall be deemed guilty of a misdemeanor and shall upon conviction be fined not less than five dollars nor more than fifty dollars.

"Any officer, teacher, or student connected with any of the state institutions of this state who shall be found guilty of violating the provisions of this act shall, if a teacher or employee, be dismissed from the further service of such state institution, and, if a student, his conviction shall work expulsion from the state institution he may be attending, in perpetuum.

"Any complaint of the violation of the provisions of this act coming to the faculty, board of control, regents, trustees, or officers of any state institution of this state shall immediately be inquired into by them, and it shall be their duty to expel students who may be proven to have been engaged in 'hazing,' tormenting, torturing or maltreating their fellow student, notwithstanding no conviction may have been had before a Justice of the Peace for the same offense."

Resolutions of State Board of Agriculture.—"Resolved, That the State Board of Agriculture is in full sympathy with the state statute on hazing, and that in the conduct of the affairs of the State Agricultural College and other institutions under its control, this law shall be rigidly enforced."

Stock Judging Pavilion

Division of Agriculture

The instruction in Agriculture is designed to meet the needs of two classes of students, those who desire to take up some kind of farming as a business, and those who desire to become agricultural experts, teachers or investigators.

Agricultural Hall, the Zoology building, Farm Mechanics Laboratory and Machine House, Horticultural Hall, and the Live Stock Pavilion provide splendid classroom and laboratory facilities.

The college herds and the Government Horse Breeding Plant provide unusual opportunity for live stock study. The college farm and the Colorado Experiment Station provide facilities for special study along the lines of agronomy, animal husbandry, entomology, forestry, and horticulture.

Of special importance to all classes of students in agriculture is the insect collection in the museum, which numbers 75,000 specimens, affording unusual opportunity for the study of the pests which prey with such disastrous results on the farm, orchard, and garden.

Agriculture in Colorado as well as in all the arid states rests on irrigation. Hence, in this region it becomes a highly specialized science. In addition to the knowledge required of the average farmer in the humid states, the farmer, orchardist, or gardener, in the arid West, must understand the use of water for the production of crops—when to apply it, its use on different soils, the amount required in the varying soils,—altitudes and climatic conditions of different seasons.

Furthermore, there are the proper preparations of the fields for the successful application of water, the proper construction of ditches and laterals for its most economical and intelligent distribution. In brief, agriculture by irrigation is in itself a science which must be mastered in order to assure the most profitable results. Instruction is given to include these special conditions. No other institution is so advantageously situated for giving instruction in arid, high altitude and irrigated agriculture.

In addition to the college equipment, there is the highly cultivated region by which it is surrounded—a region where irrigation has been most successfully developed and most profitably practiced, and where all forms of agriculture abound. Thus to the theoretical and practical instruction given in the college are added the opportunities for observations an actual experience provided by the productive and prosperous conditions of agriculture that surround the institution.

Opportunities.—The population of the country is beginning to press upon its productive capacity. Land values have risen enormously, necessitating higher and higher production in order to pay interest on the increased valuation and return a profit. To meet these increased requirements, the farmer must be better trained, more intelligent than ever before, or be reduced to a hopeless "drudge." In addition to the opportunities offered for trained men, as farm owners or operators, there are constant requests for properly fitted men as farm managers, consulting experts, teachers and investigators. The college has been unable to fill the numerous requests which it has received for such trained men.

To meet the varied and special agricultural conditions of the state, election is offered in five courses, Agronomy, Animal Husbandry, Entomology, Forestry, and Horticulture. The first two years of these courses are identical. Specialization in the respective courses begins in the junior year.

DIVISION OF AGRICULTURE

COURSE OF STUDY FOR FIRST TWO YEARS

The number before a subject refers to its description, the number after it refers to credits

FRESHMAN YEAR

First Semester

51.	Stock Judging	2
101.	Botany	5
262.	English	3
268.	Literature	2
502.	Algebra	3
503.	Trigonometry	2
553 or 556.	Shop (Bench or Forge)	3
	Drill	1

Second Semester

12.	Rural Architecture	3
102.	Economic Botany	2
201.	Surveying	3
202.	Field Work	2
263.	English	3
269.	Literature	2
301.	Physiology	3
556 or 553.	Shop (Forge or Bench)	3
	Drill	1

SOPHOMORE YEAR

First Semester

1.	Crop Production	3
151.	Chemistry	3
152.	Chemistry Laboratory	2
264.	Argumentation	2
302.	Zoology	3
309.	Zoology Laboratory	2
605.	Physics	3
606.	Physics Laboratory	2
	Drill	1

Second Semester

2.	Soils	3
52.	Stock Judging	2
153.	Chemistry	3
154.	Chemistry Laboratory	2
265.	Argumentation	3
401.	Plant Propogation	2
607.	Physics	3
608.	Physics Laboratory	2
	Drill	1

The College Barns

THE COURSE IN AGRONOMY

The most pronounced industrial development taking place in Colorado today is in agriculture. This development calls for a knowledge of the principles underlying the management of lands, the maintenance of the productive capacity of soils, and the relation of cropping systems to a permanent, profitable production.

The course in Agronomy is intended to fit young men to meet the problems presented in so far as they relate to the growth of crops and management of lands.

The great diversity of soils, altitude, and climate gives rise to a variety of crops and crop growing conditions rarely equaled. Thus, there is afforded an opportunity for studying crop production and improvement, soil and farm management under irrigated and dry farming conditions, from a moderate altitude to one so high that vegetation ceases to grow.

The modern farm requires the use of a large amount of complicated machinery. Mechanical power of one kind or another is rapidly replacing hand labor upon many farms. Many of the problems of farm labor are being solved by the adaptation of machines and motors to the work of the farm.

To meet this demand, instruction is given in Farm Machinery, Farm Motors, Rural Architecture, and Farm Equipment. Through these courses, the student becomes acquainted with the latest farm machinery, farm implements, and various types of power adapted to farm use. In the study of Rural Architecture, he becomes acquainted with the buildings of the farm, the material available for building purposes, rural sanitation and the essential points to be considered in the use of the material available for the construction of the buildings and equipment of the rural home.

Manufacturers and dealers in farm machinery, farm engines, and equipment, are rather liberal in the loan and donation of up-to-date machines, engines, and equipment for instructional purposes. The department now has on hand, upward of $15,000 worth of such implements.

The demand for young men properly trained along these lines is greater than the supply both in practical and scientific work.

While students taking work in this department may choose their electives from any of the subjects for which they are qualified, the following subjects are recommended as desirable electives: 53 Feeds and Feeding, 70 Animal Nutrition, 106 Systematic Botany, 10 and 11 Soil Fertility, 9 Agronomy Seminar, Entomology, and 55 Breeds of Live Stock.

COURSE OF STUDY IN AGRONOMY

For freshman and sophomore years of course, see page 37

The number before a subject refers to its description, the number after it refers to credits

JUNIOR YEAR

First Semester

3.	Crops Laboratory	3
13.	Farm Machinery	3
103.	Plant Histology	2
155.	Organic Chemistry	3
156.	Organic Laboratory	2
162.	Geology	2
	Electives	3
	Drill	1

Second Semester

4.	Soils Laboratory	2
14.	Farm Motors	3
104.	Plant Physiology	3
157.	Organic Chemistry	3
158.	Organic Laboratory	2
211.	Irrigation Engineering	3
	Electives	3
	Drill	1

SENIOR YEAR

First Semester

6.	Advanced Farm Crops	3
107.	Economic Fungi	3
251.	Economics	2
304.	Embryology	1
311.	Genetics	1
	Electives	8

Second Semester

7.	Farm Management	3
8.	Plant Breeding	3
253.	Irrigation Law	2
674.	Bacteriology	2
	Electives	7

Agricultural Hall

THE COURSE IN ANIMAL HUSBANDRY

Live stock production and allied industries require a considerable degree of expert knowledge. The Animal Husbandry course aims to give a broad education in general agriculture, and to train for the work of a live stock specialist.

The equipment in live stock at the college ranks with that of the best institutions in the middle west; and the freedom of electives allowed in the course permits a student to train for any special line of work open to live stock experts.

The graduate from this course has several lines of work open to him, among which are the management of live stock farms and ranches; agricultural journalism; teaching in agricultural colleges and high schools; investigational work in experiment stations; position as salesmen for live stock houses, and for live stock supply manufacturers; scientific assistant in the Department of Agriculture; and, above all, he is fitted to intelligently breed live stock upon his own farm, if he be so fortunate as to possess one.

The demand for strong men in these lines of work is insistent. The college has placed all its trained live stock men without difficulty and the demand is increasing.

Although the student is given free choice in the matter of electives, the following are suggested as being particularly suited to this course: Junior year, first semester, 3 Crops Laboratory, 6 Advanced Crops, 74 Animal Husbandry Seminar, 76 Advanced Stock Judging; second semester, 64 Swine Husbandry, 65 Pedigree Work, 75 Animal Husbandry Seminar, 688 Shoeing and Balancing, 689 Soundness, 4 Soils Laboratory, 5 Forage Crops; senior year, first semester, 63 Sheep Raising, 74 Animal Husbandry Seminar, 73 Experimental Methods, 107 Economic Fungi, 303 Elementary Entomology, 57 Meats, 59 Inspection of Dairies, 303 Entomology, 311 Genetics; second semester, 62 Judging Breed Types of Horses and Cattle, 68 Live Stock Practicums, 70 Animal Nutrition, 71 Poultry Husbandry, 72 Creamery Work, 161 Agricultural Chemistry, 10 Soil Fertility, 11 Soil Fertility Laboratory.

The Sheep Paddocks

COURSE OF STUDY IN ANIMAL HUSBANDRY

For freshman and sophomore years of course, see page 37

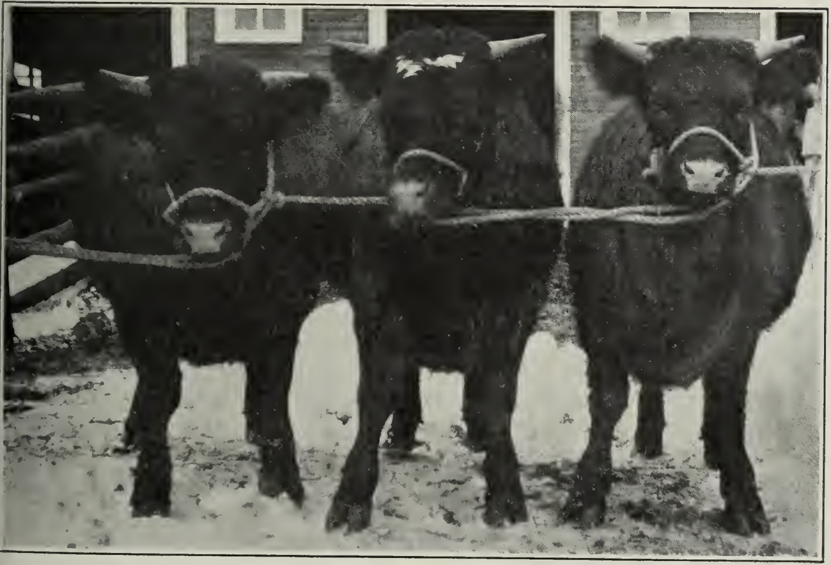
The number before a subject refers to its description, the number after it refers to credits

JUNIOR YEAR

	First Semester			Second Semester	
13.	Farm Machinery	3	14.	Farm Motors	3
53.	Feeds and Feeding	3	56.	Beef Production	2
54.	Judging Breed Types of Sheep and Swine	2	66.	Dairy Manufactures	3
55.	Breeds of Farm Animals	3	157.	Organic Chemistry	3
155.	Organic Chemistry	3	158.	Organic Laboratory	2
156.	Organic Laboratory	2	211.	Irrigation Engineering	3
	Electives	3		Electives	3
	Drill	1		Drill	1

SENIOR YEAR

	First Semester			Second Semester	
58.	Milk Production	2	7.	Farm Management	3
60.	The Horse	2	61.	Animal Breeding	3
251.	Economics	2	253.	Irrigation Law	2
304.	Embryology	1	674.	Bacteriology	2
704.	Veterinary Elements	3		Electives	7
	Electives	7			



Billy, Teddy, and Woodrow (Triplets)

THE COURSE IN ENTOMOLOGY

The aim of the course in Entomology is to prepare men for positions in the Government Bureau of Entomology and in the various agricultural colleges and experiment stations of the country, and for similar positions in foreign countries. The course also specially prepares young men to act as county horticultural inspectors, and it is a great help to those who wish to become managers of orchards and ranches.

A number of such positions are already being held by our graduates that have specialized in entomology, and the demand for well qualified young men in this line of work much exceeds the supply. The better positions call for men with a broad scholarship as a basis for their work.

Some Latin, and a good reading knowledge of German and French are a great help to any one pursuing this course.

During the junior year the required work of this course runs parallel with the course in horticulture.

While the students are given full choice of the matter of electives, the following are recommended from among those offered:—Junior year, first semester, 103 Plant Histology, 3 Crops Laboratory, 108 Elements of Forestry; second semester, 4 Soils Laboratory, 61 Animal Breeding; senior year, first semester, Modern Language, 251 Economics, 210 Photography, 405 Pomology, 406 Pomology Laboratory, 701 Veterinary Elements; second semester, Modern Language, 8 Plant Breeding, 7 Farm Management, 161 Agricultural Chemistry.

COURSE OF STUDY IN ENTOMOLOGY

For freshman and sophomore years of course, see page 37

The number before a subject refers to its description, the number after it refers to credits

JUNIOR YEAR

	First Semester			Second Semester	
13.	Farm Machinery	3	8.	Plant Breeding	3
155.	Organic Chemistry	3	14.	Farm Motors	3
156.	Organic Laboratory	2	104.	Plant Physiology	3
162.	Geology	2	157.	Organic Chemistry	3
303.	Entomology	5	158.	Organic Laboratory	2
	Electives	4		Electives	4
	Drill	1		Drill	1

SENIOR YEAR

	First Semester			Second Semester	
107.	Economic Fungi	3	253.	Irrigation Law	2
304.	Embryology	1	305.	Forest Insects	1
306.	Entomology	5	307.	Entomology	5
	Electives	9	674.	Bacteriology	2
				Electives	8

THE COURSE IN FORESTRY

The course in Forestry is primarily a technical course, and aims to teach the underlying principles of the subject together with enough practical work to show the application of these principles.

It is a four year course. The technical work in forestry begins with the first semester of the junior year and takes the larger part of the time during the remainder of the course.

During the last two years of the course, field work occupies considerable portions of the time devoted to forestry.

Although forestry as a profession is comparatively new in this country, still the demand for men of technical training in the subject is in excess of the supply.

While the students are permitted to make their own choice of electives, the following list is suggested as offering studies especially suitable for the course:—Junior year, first semester, 103 Plant Histology, 210 Photography, 257 Industrial History; second semester, 305 Forest Insects, 4 Soils Laboratory; senior year, first semester, 251 Economics, 266 Practical English, 116 Forestry Seminar, 55 Breeds of Farm Animals, 105 Experimental Plant Physiology, 119 Timber Preservation; second semester, 106 Systematic Botany, 117 Forestry Policy, 214 Meteorology, 8 Plant Breeding, 120 Ecology of Plants.

COURSE OF STUDY IN FORESTRY

For freshman and sophomore years of course, see page 37

The number before a subject refers to its description, the number after it refers to credits

JUNIOR YEAR

	First Semester			**Second Semester**	
108.	Elements of Forestry	2	104.	Plant Physiology	3
109.	Dendrology	3	110.	Dendrology	3
155.	Organic Chemistry	3	111.	Silviculture	3
156.	Organic Laboratory	2	157.	Organic Chemistry	3
303.	Entomology	5	158.	Organic Laboratory	2
	Electives	3		Electives	4
	Drill	1		Drill	1

SENIOR YEAR

	First Semester			**Second Semester**	
107.	Economic Fungi	3	8.	Plant Breeding	3
114.	Forest Mensuration	3	112.	Wood Technology	1
162.	Geology	2	113.	Wood Technology Laboratory	2
	Electives	9	117.	Forestry Policy	2
			118.	Forest Management	3
				Electives	9

COURSE IN HORTICULTURE

The horticulture of the Rocky Mountain states, is, to a great extent, in a class by itself. The dry atmosphere, high altitude, and the artificial use of water make many of the practices, if not the principles, of horticulture here different from those of the humid sections. The many natural advantages for a high development of horticulture in these sections have brought this industry rapidly to the front. Colorado fruit is already noted, in all the high class markets, for its rich color, perfect form, and fine quality, as well as for the amount of the product.

Other horticultural crops are rapidly coming into prominence. Among these, the potato industry is already an established factor in Colorado wealth. Cabbage, celery, and melon growing are coming to the front, and the possibilities for development in the line of vegetable and strawberry growing in the high mountain valleys are attracting much attention.

These intensive industries bring many problems that are beyond solution by the ordinary grower. For this reason the demand for men who know not only how to grow these plants, but also know the underlying principles of plant growth, their diseases and remedies, is becoming greater year by year.

The course in horticulture is designed to train men to meet this demand. With this end in view the course has been arranged to give the student a maximum of foundation sciences that he may be equipped to solve the problems that will confront him in the field.

Sufficient time is not available during the course to give the student as much experience in the field as is desired. It is therefore recommended that those students who have had but little experience in horti-

Class in Horticulture

cultural work shall spend one summer vacation or its equivalent in the field.

While the student is given full choice in the matter of electives, it is recommended that the following be taken:—First semester, junior year, 109 Dendrology; second semester, 253 Irrigation Law; first semester, senior year, 306 Advanced Entomology, 105 Experimental Plant Physiology; second semester, senior year, 408 Floriculture, 410 Landscape Gardening, 307 Advanced Entomology, 106 Systematic Botany, 120 Ecology of Plants.

COURSE OF STUDY IN HORTICULTURE

For freshman and sophomore years of course, see page 37

The number before a subject refers to its description, the number after it refers to credits

JUNIOR YEAR

	First Semester			Second Semester	
103.	Plant Histology	2	104.	Plant Physiology	3
155.	Organic Chemistry	3	157.	Organic Chemistry	3
156.	Organic Laboratory	2	158.	Organic Laboratory	2
162.	Geology	2	211.	Irrigation Engineering	3
303.	Entomology	5	403.	Vegetable Gardening	3
	Electives	4		Electives	4
	Drill	1		Drill	1

SENIOR YEAR

	First Semester			Second Semester	
107.	Economic Fungi	3	8.	Plant Breeding	3
304.	Embryology	1	410.	Landscape Gardening	2
405.	Pomology	3	411.	Landscape Gardening Laboratory	1
406.	Pomology Laboratory	1	412.	Pomology Seminar	2
408.	Floriculture	2	413.	Experimental Horticulture	3
409.	Floriculture Laboratory	1	414.	Plant Evolution and History of Cultivated Plants	2
	Electives	7		Electives	6

Forestry, Agriculture, and Irrigation Go Hand in Hand.

Division of General Science and Home Economics

Two general lines of work are open to women: one offering, in addition to elementary training in home economics, the advantages of advanced study in mathematics, science, language, literature, economics, and modern languages; the other giving opportunity for the detailed study of technical subjects in home economics, necessary to women who intend to follow some line of household activity as a vocation. The requirements in the first two years are the same for both courses and embrace basic work in mathematics, science, and language. Specialization begins in the junior year with a liberal choice of electives in the junior and senior years. Of the electives allowed, five credits may be chosen in the Conservatory of Music.

The problems of the home are fundamental to national health, wealth, and character. In recognition of this truth, there is given to every girl the opportunity to receive training that shall enable her to more intelligently administer the affairs of the house. Aside from its utilitarian value, such training affords a means of liberal culture and brings emphasis to the importance of the home as a social unit.

The introduction of agriculture into the rural schools, and into the high schools, opens up a new field for science teachers. The demand for efficient teachers of home economics is greater than the supply, and graduates in this line of work are sought after as dietitians, lecturers in college extension work, managers of tea rooms, and demonstrators for college or club work.

Guggenheim Hall and Mechanical Engineering Building from the South

GENERAL SCIENCE AND HOME ECONOMICS*

COURSE OF STUDY FOR FIRST TWO YEARS

The number before a subject refers to its description, the number after it refers to credits

FRESHMAN YEAR

First Semester			Second Semester		
262.	English	3	263.	English	3
268.	Literature	2	269.	Literature	2
351.	House Management and Sanitation	4	352.	Domestic Architecture and House Furnishing	5
375.	Sewing I	3	†360.	Foods I **	2
502-3.	Mathematics, or 101-A Botany*	5	504-5.	Mathematics, or 301-353 Physiology and Personal Hygiene*	5
601.	Household Physics	2	603.	Household Physics	2
602.	Household Physics Laboratory	1	604.	Household Physics Laboratory	1
	Gymnasium	1		Gymnasium	1

SOPHOMORE YEAR

First Semester			Second Semester		
151.	Chemistry	3	153.	Chemistry	3
152.	Chemistry Laboratory	2	154.	Chemistry Laboratory	2
361.	Foods II	3	260.	English History	3
264.	Argumentation	2	265.	Argumentation	3
302, 310.	Zoology or	5	362.	Foods III	2
506.	Differential Calculus	5	376.	Sewing II	2
451-5.	Modern Languages	5	452-6.	Modern Languages	5
	Gymnasium	1		Gymnasium	1

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*Students electing Home Economics are advised to select courses in botany, physiology, and personal hygiene.

**Required of Home Economics students not presenting Domestic Science upon entering.

†All students registered for courses in foods must wear as laboratory uniform, white tailored waist of cotton or linen and white apron of design executed by the department. Upon request, detailed information will be sent, regarding the type of apron, hand towel, and holder required. Lockers are available. The deposit of one dollar for locker key is refunded at the close of the year, upon the return of the key.

Simon Guggenheim Hall of Household Arts

COURSE IN GENERAL SCIENCE

The course in General Science offers unusual opportunities to young women who seek, in addition to the fundamentals of home economics, the advantages afforded by the well-equipped laboratories provided for the technical courses of the institution.

During the junior and senior years, advanced study in any science may be selected, and additional work in language, history, literature, economics, or other subjects may be chosen.

COURSE OF STUDY IN GENERAL SCIENCE

For freshman and sophomore years of course, see page 47

The number before a subject refers to its description, the number after it refers to credits

JUNIOR YEAR

	First Semester			Second Semester	
252.	Sociology	5	259.	Advanced History	2
257.	Industrial History	3	271.	American Literature	2
258.	Advanced History	2	275.	Psychology	5
453-7.	Foreign Language	5	454-8.	Foreign Language	5
	Electives	3		Electives	4
	Gymnasium	1		Gymnasium	1

SENIOR YEAR

	First Semester			Second Semester	
210.	Photography	1	273.	Literature	5
251.	Economics	2	410.	Landscape Gardening	2
266.	Practical English	1		Thesis	2
272.	Literature	3		Electives	10
	Thesis	2			
	Electives	10			

HOME ECONOMICS

The Department of Home Economics offers courses of instruction touching upon all phases of home life. The uniform requirement for all students in the first two years gives a general survey of the home training work. Opportunity is given for election along Domestic Science or Domestic Art lines in the junior and senior years. This enables the student to do more intensive work in the direction of her special interest. Each course leads to the degree of Bachelor of Science.

COURSES OF STUDY IN HOME ECONOMICS

For freshman and sophomore years of course, see page 47

The number before a subject refers to its description, the number after it refers to credits.

JUNIOR YEAR

First Semester		Second Semester	
Domestic Science	**Domestic Art**	**Domestic Science**	**Domestic Art**
155-6. Organic Chemistry 5	252. Sociology 5	157-8. Organic Chemistry 5	157-8. Organic Chemistry 5
252. Sociology 5	155-6. Organic Chemistry 5	275. Psychology 5	275. Psychology 5
363. Foods IV......4	377. Textiles I......2	390. Demonstrations.2	378. Textiles II.....2
Electives 4	379. Design and Drafting......3	Electives 6	380. Dressmaking I..2
Gymnasium 1	Electives 3	Gymnasium 1	390. Demonstrations.2
	Gymnasium 1		Electives 2
			Gymnasium 1

SENIOR YEAR

First Semester		Second Semester	
Domestic Science	**Domestic Art**	**Domestic Science**	**Domestic Art**
258. History 2	258. History 2	259. History 2	259. History 2
272. English Literature 3	272. English Literature 3	273. English Literature 5	273. English Literature 5
354. Home Nursing..2	354. Home Nursing..2	365. Serving of Meals 3	382. Art Needlework.2
364. Dietetics 2	383. Millinery 2	674-675. Bacteriology 5	Electives 9
391. Teachers' Course 3	391. Teachers' Course 3	Electives 4	
Electives 7	Electives 7		

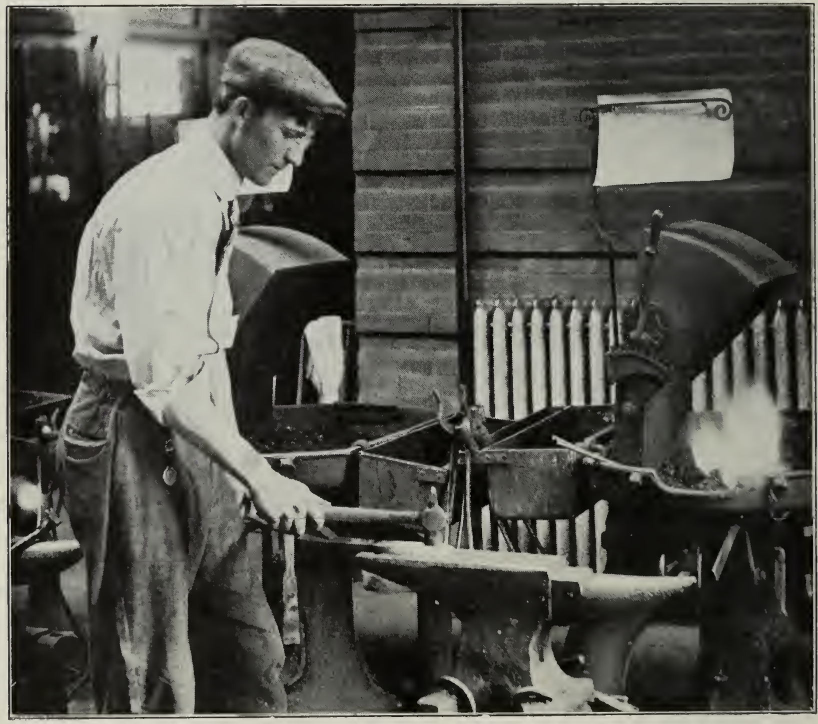
Supplementary to the courses regularly offered in the department are courses in physics, chemistry, botany, and bacteriology, in which household applications of the subjects named are especially emphasized. Elective subjects of especial interest are the courses offered in Music. 408 Floriculture, 410 Landscape Gardening, 308 Ornithology, 553 Bench Work in Wood. 66 Dairy Manufactures, 274 History of Education, 276 School Management, and 312 Eugenics. The group of Home Economics electives includes 392 Household Economy, 393 Special Problems, 384 Tailoring, 381 Dressmaking II, 391 Practice Teaching, and 366 Problems in Dietary Calculations. While it is open for the student to take any line of electives she desires, yet it is recommended that some be chosen in the direction of the plan for future activity.

Division of Mechanic Arts

In Mechanic Arts, the college offers standard four year courses in Civil and Irrigation Engineering, in Electrical Engineering, and in Mechanical Engineering.

The studies for the first two years are the same for all engineering courses. Specialization begins with the junior year, and in the junior and senior years considerable freedom in the choice of studies is allowed. A strong faculty, splendid buildings, excellent equipment, and library facilities combine to make the engineering courses especially thorough. The regular college work is supplemented with a great deal of practical outside experience. The summer field camp for Civil and Irrigation engineers, and inspection trips for the senior Electrical and Mechanical engineers, give a good knowledge of the practical needs of the profession. ,

Students in the Division of Mechanic Arts do most of the engineering work around the college. All of the electric wiring, installation of motors and transformers, electrical and much of the mechanical



Forty-Two Students at the Forge at Once

repair work, the designing and building of experimental apparatus is done by the students of this division.

The great natural resources of Colorado have been developed only sufficiently to show the possibilities of industrial development. This industrial development calls for an increasing number of well trained men. The building of railroads and trolley lines, of dams, canals and reservoirs, of hydro-electric plants and transmission lines, of factories and reduction plants, all offer opportunities for the young engineer; while the operation of these industrial enterprises opens up ever increasing opportunities for the technical graduate.

MECHANIC ARTS

COURSE OF STUDY FOR FIRST TWO YEARS

The number before a subject refers to its description, the number after it refers to credits

FRESHMAN YEAR

First Semester			Second Semester		
262.	English	3	201.	Surveying	3
268.	Literature	2	202.	Field Work	2
502.	College Algebra	3	263.	English	3
503.	Trigonometry	2	269.	Literature	2
551.	Carpentry and Joinery	1	504.	Analytic Geometry	4
552.	Mechanical Drawing	4	505.	Trigonometry	1
553 or 556.	Shop (Bench or Forge)	3	555.	Mechanical Drawing	2
554.	Shop (Lathe)	2	556 or 553.	Shop (Forge or Bench)	3
	Drill	1		Drill	1

SOPHOMORE YEAR

First Semester			Second Semester		
151.	Chemistry	3	153.	Chemistry	3
152.	Chemistry Laboratory	2	154.	Chemical Laboratory	2
506.	Differential Calculus	5	256.	U. S. Constitution	2
557.	Descriptive Geometry	5	507.	Integral Calculus	5
605.	Physics	3	607.	Physics	3
606.	Physics Laboratory	2	608.	Physics Laboratory	2
	Drill	1	631.	Applied Mechanics	3
				Drill	1

(Civil and Irrigation Engineering sophomores take 207 Field Camp No. 1.)

When the Snow Lies Deep on Ground and Tree

COURSES IN CIVIL AND IRRIGATION ENGINEERING

Successful agriculture in Colorado is based upon the science of irrigation, and existing conditions in this state call for knowledge along these lines.

As training in this line is closely associated with the other purposes of the land grant colleges, Civil and Irrigation Engineering has occupied a prominent place in the college for twenty years. It was the first course of the kind given in any American college. That the training has proved useful is shown by the records of the young men who have taken it and have attained prominent positions in the development of this and adjoining states and responsible positions in the Government Reclamation service.

The intention of the course is to give a broad and thorough foundation for engineering in general, but especially for irrigation engineering, and therefore special attention is given to subjects relating to irrigation, hydraulics, and their applications. It is intended not only to give a student the proper theoretical foundation, but to give skill in handling instruments, so that a student will be self-reliant and capable of accurately handling instrumental problems. This also includes instruction in measurement of streams, rating of ditches, etc.

The branch of highway construction has been taught in this department for years and that, together with the surveying, strength of materials, concrete, bridges, etc., places the graduates of this department where experience is only necessary to make them expert road engineers.

Considerable attention is given to practical problems that will cultivate the judgment and self-reliance, and will train the student to meet exigencies as they arise.

The splendid new Civil and Irrigation Engineering building, just constructed and equipped, makes it possible for this institution to offer students in this department advantages for instruction possessed by no other college in the United States.

Drafting

While the student is given full choice in the matter of electives, it is recommended that the electives be taken from the following:—Junior year, first semester, 210 Photography, 1 Crops, 220 Testing Laboratory; second semester, 227 Seminar, 2 Soils; senior year, first semester, 209 Draughting, 216 Water Supply, 228 Seminar, 231 Irrigation Laboratory, 3 Crops Laboratory; second semester, 222 Concrete, 229 Seminar, 233 Graphic Statics, 214 Meterology, 217 Drainage, 4 Soils, 215 Canal Management, 225 Highway Construction.

COURSE OF STUDY IN CIVIL AND IRRIGATION ENGINEERING

For freshman and sophomore years of course, see page 51

The number before a subject refers to its description, the number after it refers to credits

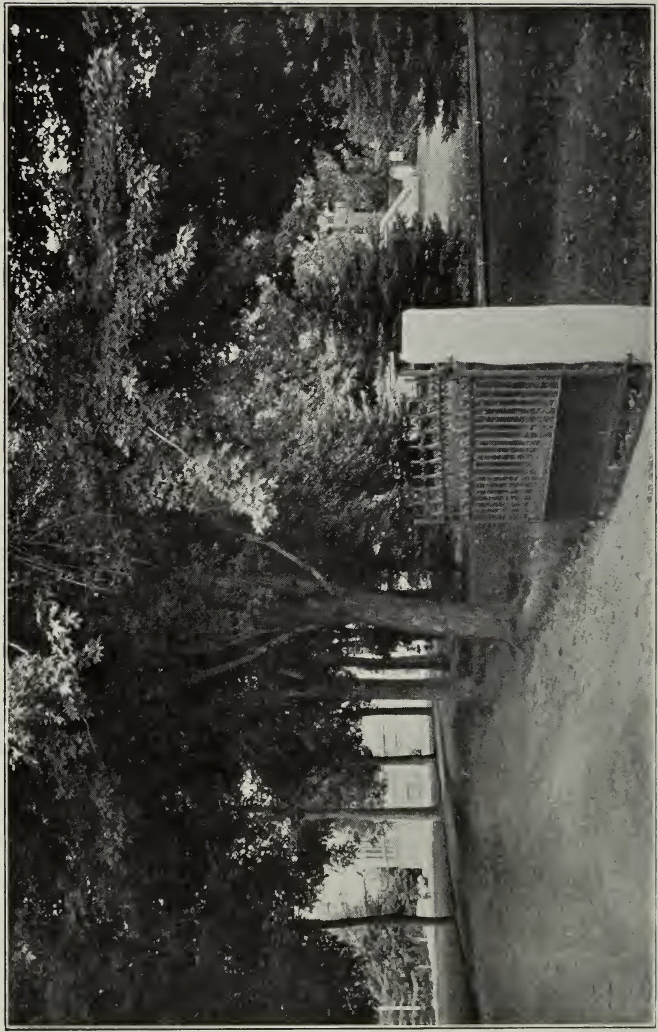
JUNIOR YEAR

	First Semester			**Second Semester**	
203.	Surveying	3	205.	Canal Surveying	2
204.	Field Work	3	206.	Field Work	2
207.	Field Camp No. 2	1	211.	Irrigation Engineering	3
208.	Drafting	3	212.	Hydraulics	5
219.	Strength of Materials	5	213.	Hydraulic Laboratory	2
	Electives	4		Electives	4
	Drill	1		Drill	1

SENIOR YEAR

	First Semester			**Second Semester**	
207.	Field Camp No. 3	1	218.	Dams	2
223.	Engineering Design	3	230.	Thesis	2
224-254.	Contracts and Specifications	1	253.	Irrigation Law	2
221.	Trusses and Bridges	4	232.	Irrigation Laboratory	3
609.	D. and A. Current Machinery	3		Electives	10
	Electives	8			

Constructing Model Road on Campus



The East Gate

THE COURSE IN ELECTRICAL ENGINEERING

The object of the course in Electrical Engineering is to train young men for service in the electrical engineering profession. The course as now taught follows the same general outline as the electrical engineering courses of the larger technical colleges. The department is well prepared both in instructional force and laboratory equipment to give such a course.

We believe that a student learns best by doing. The student is therefore given an opportunity to get experience here which he usually does not get until after he leaves college. All the electrical work about the college is done by students of this department.

While it is open for the student to make his own choice of electives, it is recommended that subjects from the following list of electives be taken:—Junior year, first semester, 220 Testing Laboratory, 558 Steam Boilers; second semester, 615 Electric Lighting and Photometry; senior year, first semester, 616 Telephones and Telegraph, 617 Telephones and Telegraph Laboratory, 567 Steam Engines, 623 Electrical Design, 625 Seminar; second semester, 628 Commercial Electrical Engineering, 629 Thesis, 627 Hydro-Electric Machinery, 630 Thesis, 622 Street Railways.

COURSE OF STUDY IN ELECTRICAL ENGINEERING

For freshman and sophomore years of course, see page 51

The number before a subject refers to its description, the number after it refers to credits

JUNIOR YEAR

First Semester			**Second Semester**		
219.	Strength of Materials	5	212.	Hydraulics	5
611.	Electrical Measurements	3	613A.	Direct Currents	3
612.	Electrical Laboratory	2	614.	Direct Current Laboratory	5
613.	Direct Current	2		Electives	6
	Electives	7		Drill	1
	Drill	1			

SENIOR YEAR

First Semester			**Second Semester**		
618.	Alternating Currents	5	620.	Alternating Currents	2
619.	Alternating Current Laboratory	5	621.	Electrical Laboratory	5
	Electives	9	626.	Seminar	1
			632.	Electrical Power Transmission	2
				Electives	9

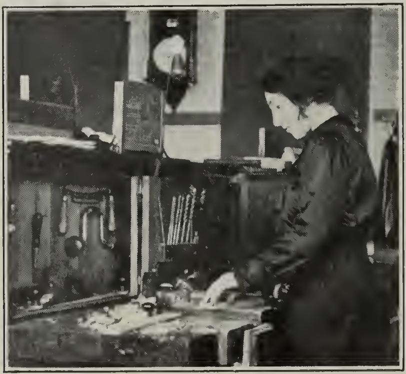
THE COURSE IN MECHANICAL ENGINEERING

Mechanical Engineering relates to the construction and use of machinery, such as steam engines, machine tools, etc.

The course as presented at the Colorado Agricultural College is such as is given at the best technical schools of the United States. The instruction is intended to be thorough and the equipment is of the very best, care being taken when obtaining apparatus that each piece shall be of the greatest usefulness for its purpose. Colorado is forging ahead magnificently along industrial lines, and with the development of the vast natural resources within her borders, new industrial enterprises are springing up everywhere, while the older ones are becoming more firmly established. With this industrial demand comes a demand for men competent to solve the problems connected with such enterprises. Young men from this college are in many of these establishments, occupying positions of trust and responsibility.

This course prepares students for the profession of mechanical engineering. It teaches the general principles of engineering and unites theoretical work and practical research. Instruction is imparted by means of text-books, lectures, illustrations, and experiments in testing materials, machines, and motors.

While it is open for the student to take any line of elective studies he desires, yet it is recommended that they be taken from the following list:—Junior year, first semester, 559 Principles of Mechanism, 560 Gas and Oil Engines, 219 Strength of Materials; second semester, 564 Machine Tools, 565 Machine Design; senior year, first semester, 570 Machine Design, 571 Specifications and Contracts, 575 Machine Shop; second semester, 577 Railway Mechanical Engineering, 579 Steam Engine Design, 580 Compressed Air Machinery, 583 Refrigeration and Refrigerating Machinery, 584 Hydraulic Machinery.



Many of the Girls Take Bench Work in Wood

COURSE OF STUDY IN MECHANICAL ENGINEERING

For freshman and sophomore years of course, see page 51

The number before a subject refers to its description, the number after it refers to credits

JUNIOR YEAR

First Semester

219.	Strength of Materials	5
558.	Steam Boilers	3
561.	Kinematics Drawing	1
562.	Shop (Foundry)	2
563.	Pattern Making	1
	Electives	6
	Drill	1

Second Semester

212.	Hydraulics	5
566.	Shop (Machine)	5
568.	Thermo-Dynamics	3
569.	Transmission of Power	1
	Electives	4
	Drill	1

SENIOR YEAR

First Semester

567.	Steam Engines and Steam Turbines	3
572.	Seminar	1
574.	Shop (Machine)	3
609.	D. and A. Current Machinery	3
610.	D. and A. Current Machinery Laboratory	2
	Electives	9

Second Semester

573.	Metallurgy	1
576.	Engineering Design	1
578.	Heating and Ventilation	2
581.	Seminar	1
582.	Thesis	2
585.	Mechanical Engineering Laboratory	3
	Electives	9

In the Machine Room

Division of Veterinary Medicine

Beginning with the college year 1913-14 the Division of Veterinary Medicine has offered a four-year course of nine months each year.

It is considered that this course, based on a fifteen unit requirement for matriculation, is in accord with the highest standards in Veterinary education. The added work in Animal Husbandry lines should meet the demands for veterinarians with scientific knowledge of the principles of breeding, dairying, proper rations, adaptation of types to market demands, and individual excellence.

Opportunities for Qualified Veterinarians.—Veterinary Medicine, in its several fields of activity, affords unusual opportunities for young men of character and professional training:

A.—Private Practice—There are many lucrative fields for practice awaiting those veterinarians who are qualified to render an appreciative service.

B.—The United States Army—Veterinarians in the Army service have positions similar to those of commissioned officers. The salary begins with $1,500 per year and there is 10 per cent. increase for each five years service up to twenty years. The position carries the same allowance as second lieutenant of cavalry.

C.—The United States Department of Agriculture—In this connection many veterinarians are employed in the Bureau of Animal Industry, as executives, investigators of animal diseases, veterinary inspectors, livestock agents, and quarantine officers. Salaries range from $1,400 to $2,500 per year.

D.—Agricultural Colleges and Experiment Stations—Veterinarians are employed in Agricultural and Veterinary Colleges as instructors, and in Experiment Stations as investigators of animal diseases, at salaries ranging from $1,500 to $3,500.

E.—Municipal Food Inspectors—Many veterinarians in addition to private practice are employed as City Veterinarians and Food Inspectors. The veterinarian is the only one qualified by training to super-

The Veterinary Ambulance

vise all departments of food inspection and his manifold duties, with due diligence, insure a satisfactory compensation.

F.—State Veterinarians—Here the salaries range from $1,500 to $3,000.

G.—Animal Husbandry—Qualified veterinarians command good fees as counselors to breeders and importers, and in many ways as guardians of the vast animal wealth of the state or nation.

FOUR YEAR COURSE IN VETERINARY MEDICINE

The number before a subject refers to its description, the number after it refers to credits

FRESHMAN YEAR

	First Semester			Second Semester	
51.	Stock Judging	2	52.	Stock Judging	2
101.	Botany	3	651.	Anatomy Laboratory	5
101.	Botany Laboratory	2	660.	Physiology	5
650.	Anatomy Laboratory	5	663.	Materia Medica	5
655.	Histology	4	681.	Surgical Restraint	1
656.	Histology Laboratory	3	690.	Clinic	1
	Drill	1		Drill	1

SOPHOMORE YEAR

	First Semester			Second Semester	
53.	Feeds and Feeding	3	61.	Animal Breeding	3
302.	Zoology	3	653.	Anatomy Laboratory	5
309.	Zoology Laboratory	2	662.	Physiology	2
652.	Anatomy Laboratory	5	665.	Pharmacy Laboratory	2½
661.	Physiology	2	674.	Bacteriology	3
664.	Materia Medica	3	675.	Bacteriology Laboratory	2½
	Drill	1	691.	Clinic	1
				Drill	1

JUNIOR YEAR

	First Semester			Second Semester	
55.	Breeds of Farm Animals	3	66.	Dairy Manufactures	3
304.	Embryology	1	670.	Parasitology	3
672.	Pathology	3	671.	Parasitology Laboratory	1
673.	Pathology Laboratory	3	683.	Surgery	2
682.	Surgery	2	684.	Lameness	3
693.	Clinic	2½	694.	Clinic	2½
697.	Theory and Practice	4	698.	Theory and Practice	5
	Drill	1		Drill	1

SENIOR YEAR

	First Semester			Second Semester	
255.	Jurisprudence	1	121.	Poisonous Plants	2
668.	Therapeutics	2	669.	Therapeutics	2
676.	Meat Inspection	3	678.	Laboratory Diagnosis	5
685.	Surgery	2	688.	Shoeing and Soundness	2
686.	Obstetrics	4	696.	Clinic	2½
687.	Surgical Exercises	1	700.	Theory and Practice	4
695.	Clinic	2½	702.	Dairy Inspection	2
699.	Theory and Practice	5			

DEPARTMENTS

AGRONOMY

ALVIN KEYSER	Professor
D. W. FREAR Associate Professor and State Leader Farm Management	
J. D. MARSHALL	Assistant Professor
S. B. NUCKOLS	Assistant Professor
JEROME B. FRISBEE	Instructor

The Department of Agronomy gives instruction in those subjects which relate to the production of field crops, to soils and to the management of land. The great diversity of Colorado soils, climate, and elevation gives a diversity of crops and crop culture rarely equaled. In meeting these diverse conditions, abundant opportunity is offered to study the many phases of crop production, plant breeding, soil physics, soil fertility, and farm management.

1.—Crop Production—A study of Colorado field crops; their seeding, culture, harvesting, and adaptability to different locations with respect to altitude, with and without irrigation. Three hours attendance, three credits, first semester, sophomore year. Mr. Marshall

2.—Soils—Principles of the origin, physics, chemistry, and biology of soils; their relation to crop production. Three hours attendance, three credits, second semester sophomore year. Text, "Soils," by Lyon and Fippin. Mr. Keyser and Mr. Marshall

3.—Crops Laboratory—Laboratory study of Colorado field crops. Identification and classification. Relation of parts and their economic uses. Seed storing, purity, and germination. Treatment of economic diseases. Grading and judging. Six hours attendance, three credits,

Class in Farm Architecture

first semester, junior year. Text, "Examining and Grading Grains." by Lyon and Montgomery. Mr. Nuckols

4.—Soils Laboratory—Physical and mechanical properties of soils, their relation to tillage, soil moisture, water application, and crop growth. Four hours attendance, two credits, second semester, junior year. Fee, $2.00. Mr. Marshall

5.—Forage Crops—A laboratory and classroom study of the native and cultivated pasture and meadow crops of Colorado. Their occurrence, culture, adaptability to different regions, feeding value, and uses. Prerequisite, 1. Students without prerequisite may enter only by consent of the head of the department. Four hours attendance, two credits, second semester. Elective. Mr. Nuckols

6.—Advanced Farm Crops—A more detailed study than Agronomy 1, Crop Production, of selected field and forage crops. Their history, character and composition; culture methods, adaptability; marketing and uses. Three hours attendance, three credits, first semester, senior year. Text, "Cereals in America," by Hunt. Mr. Nuckols

7.—Farm Management—The farming business; relation and adjustment of the various activities, location of farm equipment, labor, accounting, and marketing. Types or systems of farming and their relation to a permanent agriculture. Irregular or special students may not elect Farm Management without the consent of the head of the department. Three hours attendance, three credits, second semester, senior year. Mr. Keyser and Mr. Nuckols

8.—Plant Breeding—A study of the principles of plant improvement. Theories of heredity and variation. Improvement of plant crops by breeding. Work of modern plant breeders. Text, lectures, readings. Irregular and special students may not elect Plant Breeding without the consent of the head of the department. Three hours attendance, three credits, senior year, second semester.

Mr. Keyser and Mr. Nuckols

9.—Agronomy Seminar—Lectures, readings and consultations on

Class in Farm Machinery

assigned agronomic topics. Elective, first semester, senior year, one hour attendance, one credit, unless otherwise arranged.
Mr. Keyser

10.—Soil Fertility—The productive capacity of lands. The relation of manurage, farming methods, and systems to fertility and its maintenance. Elective, second semester, senior year. Three hours attendance, three credits. Mr. Keyser and Mr. Nuckols

11.—Soil Fertility Laboratory—Laboratory work, illustrating principles of soil fertility. Field observations, lectures, and readings. Elective, second semester, senior year, four hours attendance, two credits. Mr. Keyser and Mr. Nuckols

12.—Rural Architecture—The student will be required to make complete working drawings for selected or assigned rural buildings and equipment. In addition to the designing of buildings, a portion of the time will be devoted to the study of building materials available for the rural builder, including farm cement and concrete construction and such other building materials as are most readily available in the rural community. The minor equipment about the farm and minor building equipment for increasing the convenience of such structures will receive proper emphasis. Required, second semester, freshman year, six hours attendance, three credits. Mr. Frisbee

13.—Farm Machinery—A course of instruction in the machinery of the farm. The various machines, their uses and manufacture are studied, in relation to their various places of operation upon the farm. Tillage, machinery, seeding machinery, harvesting machinery, pumping machinery, and general labor saving machinery adapted to the different processes of farm work are taken up and studied. Usually machines adapted for each of these purposes are available from a number of different manufacturers. Six hours attendance, three credits, first semester, junior year. Text, "Farm Machinery and Farm Motors," by Davidson and Chase. Fee, $1.00. Mr. Frisbee

14.—Farm Motors—A study of the motors and power machinery available for farm use. The plans of construction, the care and use of the various types of these motors are carefully studied, including the following motors: The horse, steam, gasoline, water, and electric engines. Methods of applying these various motors to use upon the farm are illustrated. Required, second semester, junior year, six hours attendance, three credits. Fee, $2.00. Mr. Frisbee

15.—Rural Architecture—A more advanced course in Rural Architecture than course 12. This course is recommended as elective for Agronomy, Animal Husbandry, and Horticultural students. Credit according to work done. Prerequisites, courses 12, 13, 14. May be elected by other than regular students only by the consent of the head of the department. Mr. Frisbee

ANIMAL HUSBANDRY

G. E. MORTON............................Professor
H. E. DVORACHEK...............Associate Professor
J. A. HELMREICH.........................Instructor

51.—Judging Market Types of Sheep and Swine—Training in the judging of mutton and fine-wooled sheep, and of lard and bacon hogs.

High class, show winning representatives of Southdown, Shropshire, Oxford Down, Hampshire, Ryeland, Cotswold, and Rambouillet sheep, and of Berkshire, Poland China, Duroc Jersey, and Tamworth swine are used for class work.

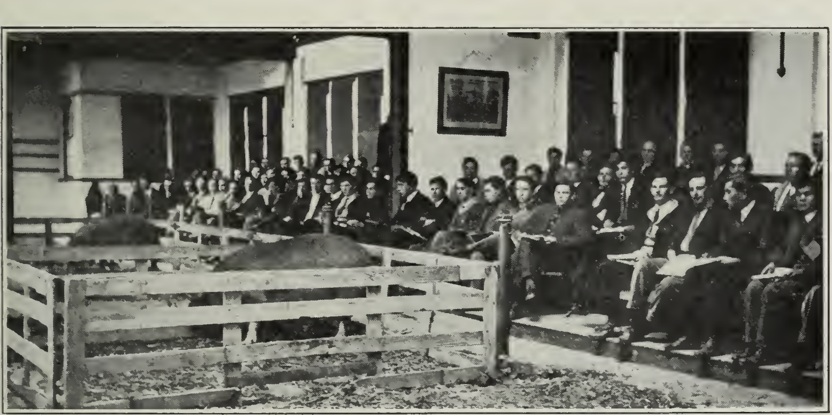
Required in the divisions of Agriculture and of Veterinary Medicine. Four hours attendance, two credits, freshman year, first semester. Text, Craig's "Judging Live Stock."

Mr. Dvorachek and Mr. Helmreich

52.—Judging Market Types of Horses and Cattle—Score card and ring judging of horses and cattle. Aberdeen-Angus, Hereford, Short Horn, Red Polled, Ayrshire, Jersey, and Holstein Friesian cattle, and American Saddle, American Trotter, and Percheron horses owned by the college, are used for judging work. The best collection of carriage horses available for instrucion at any agricultural college is found in the breeding stud maintained jointly by the Colorado Agricultural College and the U. S. Department of Agriculture.

Required in the Agricultural Division, sophomore year, and in Veterinary Medicine, freshman year, four hours attendance, two credits, second semester. Mr. Dvorachek and Mr. Helmreich

53.—Feeds and Feeding—Required in Animal Husbandry, junior year and Veterinary Medicine, sophomore year, three hours attendance, three credits, first semester. Prerequisites, 151, 152, 153 and 154. Not elective for irregular or special students except with the con-



Stock Judging

sent of the head of the department. Text, Henry's "Feeds and Feeding." Mr. Dvorachek

54.—Judging Breed Types of Sheep and Swine—Required in the Animal Husbandry course. Prerequisite, 51. Four hours attendance, two credits, junior year, first semester. Mr. Helmreich

55.—Breeds of Farm Animals—A course in which the breeds of all classes of live stock are taken up. Required in Animal Husbandry and Veterinary Medicine. Junior year, first semester, three hours attendance, three credits. Text, Plumb's "Types and Breeds of Farm Animals." Mr. Helmreich

56.—Beef Production—Modern methods of producing beef for the market, economic conditions to be considered, feed yard equipment, breeding or selection of stock, feeding and management. Required in the Animal Husbandry course. Prerequisite, 53, 55. Two hours attendance, two credits, junior year, second semester. Lectures, assigned work, and Mumford's "Beef Production." Mr. Morton

57.—Meats—A study of meat and the cuts of meat from the producer's standpoint. The effect of feed on the quality of meat, the chemical composition of meats, dressing carcasses, and curing meats. Elective, two hours attendance, one credit, senior year, first semester. Lectures and demonstrations. Mr. Dvorachek

58.—Milk Production—Principles of dairy farming, economic and sanitary milk production, available feeds, management of herd, keeping of records of individual cows. Prerequisites, 53, 55. Required in the Animal Husbandry course, two hours attendance, two credits, senior year, first semester. Lectures. Mr. Dvorachek

59.—Inspection of Dairies—Principles and practice of dairy inspection. Lectures. Prerequisites, 53, 55, 58. Elective, one hour attendance, one credit, first semester, senior year. Mr. Morton

60.—The Horse—The horse as a machine. Selection, breeding, care and training of horses. Required in the Animal Husbandry course, first semester, senior year, two hours attendance, two credits. Prerequisites, 52, 53, 55. Texts, Hayes' "Points of the Horse," and Gay's "Profitable Horse Husbandry." Mr. Dvorachek

61.—Animal Breeding—Includes work on the principles, methods and practice of breeding; a study of heredity, atavism, variation and allied subjects, and the methods of breeding farm animals practiced by the leading improvers of live stock. Required of Animal Husbandry seniors and Veterinary Medicine sophomores, three hours attendance, three credits, second semester. Prerequisites, 304, 311.
Mr. Morton

62.—Judging Breed Types of Horses and Cattle—Advanced Judging following the various breed standards. Besides using the large number of animals owned by the college, trips are planned to a number of stock farms in Northern Colorado for the purpose of bringing the student into touch with leading herds of all the well-known breeds.

Elective. Prerequisite, 52. One and one-half credits (ten hours per week from the ninth to eleventh weeks, inclusive), senior year, second semester. Mr. Morton

63.—Sheep Raising—Practical side of breeding; handling on the farm and range; lamb feeding. Elective, one hour attendance, one credit, senior year, second semester. Mr. Helmreich

64.—Swine Husbandry—Pork production; swine breeding; relation of industry to dairy farming; economical rations; hog farming. Prerequisites, 51, 53, 55. Elective, two hours attendance, two credits, junior year, second semester. Mr. Morton

65.—Pedigree Work—Sets of all the leading American and several foreign herd books are available for this work. A close study of pedigrees, and of the methods of writing and recording them. Elective, two hours attendance, one credit, junior year, second semester. Assigned work. Mr. Helmreich

66.—Dairy Manufactures—A study of the composition of cow's milk; the separation of cream by gravity and by centrifugal means; the Babcock method of testing for butter fat; the handling of milk, ripening of cream; making of butter; bacteriology of butter, cheese, etc. Required in courses in Animal Husbandry and Veterinary Medicine. Five hours attendance (one hour text and four hours laboratory), three credits, second semester, junior year. Fee, $2.00.

Mr. Dvorachek

67.—Animal Husbandry Seminar—Students work up selected subjects and report on them, making use of current literature and recent experimental and research work. The recitation period is devoted to discussion. Prerequisites, 53, 55. Elective, two hours attendance, two credits, first semester (Taught in 1915-1916). Mr. Morton

68.—Live Stock Practicums—Instruction and practice in cleaning and grooming animals, splicing rope and making halters, braiding manes and tails, fitting for show, fitting harness to horses, throwing cattle, shearing sheep and performing common live stock operations.

In Front of Administration Building

One credit (two hours per day; twelfth to sixteenth weeks, inclusive). Elective, senior year, second semester. Mr. Morton and herdsmen

69.—Animal Husbandry Seminar—A continuation of 67. Prerequisites, 53 and 55. Elective. Two hours attendance, two credits, second semester. (Taught in 1915-1916.) Mr. Morton

70.—Animal Nutrition—A study of the principles of nutrition and of the most recent work done in that line. Prerequisites, 53, 151, 152, 153, and 154. Elective, three hours attendance, three credits, senior year, second semester. Texts, Kellner's "Scientific Feeding of Farm Animals" and Lusk's "The Science of Nutrition." Mr. Dvorachek

71.—Poultry Husbandry—Practical instruction in housing, feeding and caring for fowls; judging breeds and types; incubating and rearing chicks, fattening and marketing. Students will be required to plan poultry buildings, brooders and brooder houses, feeding appliances, etc., and help in their construction; also to take charge of the work of caring for fowls, incubating and rearing chicks. Elective, five credits, seven hours attendance (three hours text and four hours laboratory), senior year, second semester. Mr. Morton

72.—Creamery Work—Advanced work is given in testing dairy products, creamery calculations, cream ripening, starters, churning, packing and marketing of butter, composition of butter, judging butter, cheese making, etc. Elective, senior year, four hours attendance, two credits, second semester. Prerequisite, 66. Fee, $2.00. Mr. Dvorachek

73.—Experimental Methods—A study of modern methods of livestock experimentation, accompanied by practice in conduct of an experiment. Elective, first semester, senior year, five credits. Lectures and assigned work. Mr. Morton

74.—Animal Husbandry Seminar—Work similar to course 67. Elective, two hours attendance, two credits, first semester. Prerequisites, 53, 55. (Taught in 1914-1915.) Mr. Morton

75.—Animal Husbandry Seminar—A continuation of course 74. Two hours attendance, two credits, second semester. (Taught in 1914-1915.) Messrs. Morton, Dvorachek, and Helmreich

76.—Advanced Stock Judging—For judging contest at Western Stock Show. Elective, four hours attendance, two credits, first semester. Prerequisites, 51, 52, 54. (Taught in 1914-1915.) Mr. Dvorachek

77.—Advance Stock Judging—Same as course 76. (Taught in 1915-1916.) Mr. Dvorachek

BOTANY AND FORESTRY

B. O. LONGYEAR	Professor
W. W. ROBBINS	Assistant Professor

101.—General Botany—In this subject the student takes up the study of plants in the probable order of their development, beginning with the lowest and simplest forms and ending with the highest types.

Thus the algae, mosses, liverworts, ferns, and seed plants are studied with the idea of giving the student a general view of the main divisions of the whole plant kingdom according to their natural relationships. With the higher plants comparative studies are made of roots, stems, and buds, leaves, flowers, fruits, and seeds, from the standpoint of their morphology and ecology. Simple and compound microscopes are used and records are kept in the form of notes and drawings. Required of all students in the Division of Agriculture and Veterinary Medicine. Three lecture hours, four laboratory hours, five credits, first semester, freshman year. Fee, $1.00. Mr. Robbins

101A.—General Botany—The above course varied by the study of economic plant products such as starches, oils, spices, extracts, grains, fibers, etc., together with a brief consideration of the common diseases or ornamental plants, is an alternative, required in the Division of General Science and Home Economics. Three lecture hours, four laboratory hours, five credits, first semester, freshman year. Text, "Plants and Their Uses," Sargent. Fee, $1.00. Mr. Robbins

102.—Economic Botany—This deals with the botanical characters of the plants with which the agriculturist is most directly concerned; with the plants which constitute the crops of the farm, orchard and garden. Required of all students in the Division of Agriculture. Prerequisite, 101. Four hours attendance, two credits, second semester, freshman year. Mr. Robbins

103.—Plant Histology—This deals with the minute structure of plants or the morphology of tissues, and is carried on by means of the compound microscope. Required in Agronomy and Horticulture courses.

Upper Limit of Forestry Students' Activities

Prerequisite, 101. Four hours attendance, two credits, first semester, junior year. Text, "Plant Anatomy," Stevens. Fee, $1.00.
Mr. Robbins

104.—Plant Physiology—This deals with the fundamental processes of plant growth, absorption, conduction, transpiration, metabolism, and irritability. Required in Entomology, Horticulture, and Forestry courses. Prerequisite, 103. Three hours attendance, three credits, second semester, junior year. Text, "Plant Physiology," Duggar.
Mr. Robbins

105.—Experimental Plant Physiology—The student investigates physiology of plants by means of suitable apparatus. Experiments are performed with plants in the laboratory and greenhouses and the results are tabulated for the drawing of conclusions. Elective for students in the Agricultural group. Prerequisite, 104. Six hours attendance, three credits, first semester. Text, "Plant Physiology," by Ganong. Fee, $2.00
Mr. Longyear and Mr. Robbins

106.—Systematic Botany—An advanced course in the study of native and introduced seed plants of the state as to their systematic relations. It is carried on by means of laboratory work and field excursions. Elective. Prerequisites, 101 and 102. Six hours attendance, three credits, second semester.
Mr. Robbins

107.—Economic Fungi—The species of fungi which are the causes of the various diseases of plants, especially those of the farm, orchard, and garden, are studied both as to their systematic relations and their economic importance. Required in Agronomy, Entomology, Forestry, and Horticulture courses. Must be preceded by 103. Laboratory work with lectures and reference reading. Six hours attendance, three credits, first semester, senior year. Text, "Fungous Diseases of Plants," Duggar. Fee, $1.00
Mr. Robbins

108.—Elements of Forestry—A general study of what forestry is, its history and development, its aim and especially its relation to agriculture. A suitable text, together with lectures, will be used. Prerequisites, 101 and 102. Required, two hours attendance, two credits, first semester, junior year. Text, "Primer of Forestry, Parts I, II," Pinchot.
Mr. Longyear

109.—Dendrology—A systematic study of the botanical characters, distribution, habits and economic qualities of the different trees. The work is laboratory in character and is supplemented with field work in identification of trees and shrubs. Some attention is also given to the ecological requirements of the plants studied. Seeds of trees and shrubs are collected and stored for planting, and cuttings are taken of those species adapted to that method of propagation. Prerequisites, 101 and 103. Required, one hour lecture, four hours laboratory, three credits, first semester, junior year. Text, "Manual of the Trees of North America," Sargeant.
Mr. Longyear

110.—Dendrology—This is a continuation of 109, which is prerequisite. Required, second semester, junior year, three credits.

Mr. Longyear

111.—Silviculture—A study of the reproduction of trees. The various systems of regeneration, transplanting, and thinning are considered. Practical work is taken up in preparing seed beds, planting the seed, and caring for the seedlings, and other processes in the production of forest nursery stock. Comparisons between artificially and native grown stock are made and collection of natural seedlings is taken up in the nearer forested regions. Required. Prerequisites, 109 and 110. One hour lecture, four hours laboratory work; three credits, second semester, junior year. Mr. Longyear

112.—Wood Technology—The structure and the physical and chemical properties of wood are presented in the form of lectures and a suitable text. The uses of wood in the various commercial ways, together with methods of harvesting, seasoning, and marketing forest products are considered. Required. Prerequisites, 103, 109 and 110. One hour attendance, one credit, second semester, senior year.

Mr. Longyear

113.—Wood Technology Laboratory—This is work supplementary to 112. The structure of wood is studied, both with and without the aid of the microscope, from prepared sections and other material. The student also practices the identification of the more important commercial woods. Four hours attendance, two credits, second semester, senior year. Mr. Longyear

114.—Forest Mensuration—Measurement of timber in the various units employed in harvesting and marketing the forest crop. Estimating the volume of single trees and timber stands; construction of log rules and volume tables and the use of these tables in log and tree measurements. Studies of increment are made, by which the growth of trees (during different periods) is determined and upon which estimates of future timber values may be based. Required, one hour lecture, four hours laboratory, three credits. Prerequisite, 110, first semester, senior year. Mr. Longyear

A Corner of the Campus

115.—Tree Pathology—The diseases to which trees are subject are discussed by means of lectures and text book work. Specimens showing the most important timber diseases will be freely used to illustrate this subject. Elective. One hour attendance, one credit. Prerequisites, 103 and 108. Second semester, senior year.
Mr. Longyear

116.—Forestry Seminar—During this period the special phases of forestry, and current literature are discussed. Elective. Two hours attendance, two credits, first semester, senior year.
Mr. Longyear

117.—Forestry Policy—Matters relating to state and national forest holdings; the laws relating to their management and the subject of taxation, benefits, fire laws, and forest legislation, as it concerns the use of our forest reserves, are here considered. Required. Two hours attendance, two credits, second semester, senior year.
Mr. Longyear

118.—Forest Management—Completing of forest mensuration work of the preceding semester with further studies and operations along the same lines. The theoretical and practical handling of a timber tract or forest area is considered. Working plans based upon forest surveys, together with financial estimates, may be prepared from data secured through the study of some special problem. Required, one hour lecture, four hours laboratory, three credits, second semester, senior year. Prerequisites, 111 and 114.
Mr. Longyear

119.—Timber Preservation—The decay of wood; the prevention of decay by the various methods of seasoning, carbonization, coating, injection, and open tank treatments are considered. The well equipped timber treating plant on the college grounds, installed under the direction of the Forest Service, is available for demonstration and experimental work in this subject. Elective. Two hours attendance, one credit, first semester, senior year. Laboratory work, lectures and reference reading.
Mr. Longyear

120.—Ecology of Plants—A study of plant associations and the individual plant organism and its various parts in relation to the environment. Detailed study is made of roots, leaves, stems, flowers, fruits, and seeds as to their origin, role, and variation. An advance course open only to those having had general botany, plant histology, and plant physiology. Special attention is given to crop and forest ecology. Elective. Three hours attendance, three credits, second semester. Reference reading. Text, "A Textbook of Botany," Vol. II., Ecology, Cowles.
Mr. Robbins

121.—Weeds and Poisonous Plants—Weeds and poisonous plants of western states are given primary consideration. A study of botanical characteristics as means for identification of our weeds and stock poisoning plants, and understanding their means of dispersal, harmful qualities, habits of growth, etc. Study of weed seeds, their distinguishing characteristics, and detection in the seeds of economic plants. Drawings and note taking. In the classroom such topics as the following are taken up: Classes of weeds; how weeds injure crops; characteristics of weeds; geographical distribution; how weeds spread; means for seed dispersal; weeds of special crops; control and eradication; weed introduction; weed legislation and seed inspection laws; and native range poisonous plants. Reference reading. Required in Division of Veterinary Medicine. Three hours attendance, two credits, second semester, senior year. Mr. Robbins

CHEMISTRY AND GEOLOGY

W. P. HEADDEN............................Professor
C. E. VAIL.......................Assistant Professor
H. A. DOERNER...........................Instructor

In all Laboratory courses in Chemistry a deposit of $5.00 to insure against breakage is required.

151.—Inorganic Chemistry—Lectures, text, and reference study of the principles of the science, covering the chemistry of the non-metals and their typical and important compounds. Required in all divisions except Veterinary Medicine, sophomore year, three hours lectures and demonstrations, first half of first semester, two hours lectures, one hour quiz, second half of first semester, three credits. Text, Kahlenberg's "Outlines of Chemistry." Mr. Vail

152.—Inorganic Laboratory—Exercises to accompany 151. Two quiz periods of two hours each, first half of first semester, four hours laboratory, second half of first semester, sophomore year, two credits. Fee $2.00. Mr. Vail and Mr. Doerner

153.—Inorganic Chemistry—Continuation of 151, covering the chemistry of the metals. Prerequisites, 151 and 152. Two hours lectures, one hour quiz, three credits, second semester, sophomore year. Mr. Vail

Studying Birds

154.—Inorganic Laboratory—Exercises to accompany 153. A study of typical metals, their properties, tests, and grouping; preparation, properties, and reactions of important compounds. Two periods of two hours each, two credits, second semester, sophomore year. Fee, $4.00.
Mr. Vail and Mr. Doerner

155.—Organic Chemistry—Lectures and textbook study of the aliphatic series. Required in Divisions of Agriculture and Home Economics, junior year. Prerequisites, 151, 152, 153 and 154. Three hours attendance, three credits, first semester. Text, Perkin & Kipping's "Organic Chemistry."
Mr. Vail

156.—Organic Laboratory—Exercises designed to familiarize the student with the properties and reactions of typical and important compounds, their preparation and qualitative tests. Required in the Divisions of Agriculture and Home Economics, junior year. Accompanies 155. Four hours attendance, two credits, first semester. Fee, $5.00.
Mr. Vail and Mr. Doerner

157.—Organic Chemistry—Lectures and textbook study on the aromatic series. Continuation of 155. Prerequisites, 151 to 156 inclusive. Three hours attendance, three credits, second semester.
Mr. Vail

158.—Organic Laboratory—Continuation of 156. Accompanies 157. Four hours attendance, two credits, second semester. Fee, $5.00.
Mr. Vail and Mr. Doerner

159.—Qualitative Analysis—Laboratory exercises. Elective, junior year. Offered only to class of six or more. Thorough drill in theory and practice of separation and identification of the common metals and acids. Prerequisites, 151 to 154 inclusive. Five periods of two hours each, five credits, first semester. Fee, $6.00.
Mr. Vail and Mr.Doerner

160.—Qualitative Analysis—Continuation of 159, including blowpipe practice and analysis of complex solids. Five periods of two hours each, five credits, second semester. Fee, $6.00.
Mr. Vail and Mr. Doerner

161.—Agricultural Chemistry—Lectures, demonstrations, and assigned readings on the chemistry of soils and agricultural products, including discussion and study of the methods employed for their analysis. Elective, senior year. Two hours attendance, two credits, second semester. Prerequisites, 151 to 158 inclusive.
Mr. Vail

162.—Geology—Required in the Agronomy, Entomology and Horticultural courses, junior year; in the Forestry course, senior year. Prerequisites, 151 to 154 inclusive. Two hours attendance, two credits, first semester. Text, Dana's Revised Textbook of Geology.
Mr. Vail

CIVIL AND IRRIGATION ENGINEERING

EDWARD B. HOUSE	Professor
OLIVER PENNOCK	Assistant Professor

201.—Surveying—This course covers the principles underlying the practice of surveying, including the use of chain and compass, in measuring angles and distances, a discussion of the errors that may occur, the balancing of surveys and plotting of field notes, and all other computations that may occur in the course of preparation of a complete map. Particular attention is paid to correct methods of taking field notes. Prerequisite, trigonometry. Three hours attendance, three credits, second semester, freshman year. Required in Divisions of Agriculture and Mechanic Arts. Text, "Hosmer & Breed," Vol. 1.

Mr. Pennock

202.—Field Work—Practice in the use of compass and level. Taken with 201. Practical problems in land surveying and mapping. Four hours attendance, two credits, second semester, freshman year. Required in Divisions of Agriculture and Mechanic Arts. Fee, $2.00.

Mr. Pennock

203.—Surveying—This course is a continuation of that offered in the second semester, freshman year. It is devoted to the use of the

Ready for the Day's Work

transit and the discussion in greater detail of general and practical methods in use in special classes of survey work, topographic and hydrographic work, etc. The determination of the true north by means of observations on Polaris, and by means of the solar attachments is taught, as is also the investigation of the systematic errors of the transit and level and the means of correcting the same. Stadia methods are taken up, and in this and the other kinds of work it is the aim to produce quick and accurate instrument men. Prerequisites, 201, 202. Three hours attendance, three credits, first semester, junior year. Required. Text, "Hosmer & Breed," Vol. 2. Mr. Pennock

204.—Field Work—Transit and solar work taken in connection with 203. Prerequisites, 201, 202, 203. Six hours attendance, three credits, first semester, junior year. Required. Mr. Pennock

205.—Canal Surveying—Reconnaissance, preliminary, and location surveys; simple, compound, and transition curves; earthwork, covering the usual methods of computing volume and haul and shrinkage of earthwork; details of construction of the typical canal; covering the effect of grade and curvature on the operation of the canal and the theory of the correct balancing of these features. Prerequisites, 201, 202, 203. Two hours attendance, two credits, second semester, junior year. Text and lectures. Required. Mr. Pennock

206.—Field Work—This course is taken with 205. A preliminary survey for a line of railroad is made and plans and profiles drawn. From this data, the usual calculation of quantities is made, and the office location projected. This office location is then put on the ground, and cost estimates made. Prerequisites, 201, 202, 203. Four hours attendance, two credits, second semester, junior year. Required. Fee, $1.00. Mr. Pennock

207.—Field Camp—Two weeks before the opening of college in the fall, the sophomore, junior, and senior students in Civil Engineering spend two weeks in the mountains. The sophomores act as rodmen for the upper classmen; the juniors act as instrument men on the survey of a proposed reservoir or other topographic work; and the seniors have charge of the parties and are held responsible for the accuracy of the work. Two credits. Required.

Mr. House and Mr. Pennock

208.—Drafting—This time is given to the platting of the survey notes of the field camp of the previous summer. The methods of map making which have been previously studied, here receive further exposition by their practical application to problems, all details of which the student has followed from the time of the beginning of the surveys. In the case of the surveys that have to do with water rights, all the necessary forms that have to be complied with in the filing of claims are studied, and the maps are made to conform to them. Prerequisite, 207. Six hours attendance, three credits, first semester, junior year. Required. Mr. Pennock

209.—Drafting—This is a continuation of the drafting course of the junior year. Prerequisite, 207. First semester, senior year. Four hours attendance, two credits. Elective. Mr. House

210.—Photography—This subject has lately become of great importance and value to the engineer, for it gives him a means of making records of works in process of construction, for taking notes in the field and often for making surveys in reconnaissance. Each student is given instruction in the selection and the use of a camera, in development of plates and in printing from negatives. He is required to take photographs, to develop his own plates, and to make prints from the same on different papers. Attendance one hour, one credit, first semester, junior year. Elective. Fee, $2.00. Mr. House

211.—Irrigation Engineering—The principles of irrigation, the duty of water, the measurement of water, the location of irrigation systems, the location of diversion weirs, headgates, and flumes, design and construction of headgates, flumes, and drops, are taught. The methods of irrigation as practiced in different parts of the country are taken up, and the student is given a thorough understanding of the methods of location of an irrigation system and its proper management. Prerequisite, 201. Three hours attendance, three credits, second semester, junior year. Text, Wilson's "Irrigation Engineering," supplemented by lectures. Required. Mr. House

212.—Hydraulics—A thorough course in theoretical hydraulics as presented by modern authors. Prerequisite, Integral Calculus. Five hours attendance, five credits, second semester, junior year. Required. Text, Merriam's "Theoretical Hydraulics." Mr. House

213.—Hydraulic Laboratory—The use of meters for measuring the velocity of water in streams and the experimental determination of the constants for different hydraulic formulas together with the testing of water motors and pumps of all kinds. Four hours attendance, two credits, second semester, junior year. Taken with 212. Required. Mr. House

214.—Meteorology—A study of the movements of the atmosphere, the formation, progress, and prediction of storms, together with the climate of different countries. Methods of taking meteorological observations, the keeping of records and interpretation of the same are taken up. One hour attendance, one credit, second semester, senior year. Elective. Text, "Waldo's Elements of Meteorology." Mr. House

215.—Canal Management—This course is intended to give an intelligent knowledge of the problems of such duties as will qualify the students technically for taking part in administration in the distribution of water when acting as water commissioners or canal superintendents. One hour attendance, one credit, second semester, senior year. Prerequisites, 211 and 212. Lectures. Elective. Mr. House

216.—Water Supply—This course treats of the methods of procuring an ample supply of water for irrigation and domestic purposes. The source of supply, the manner of conveying, storing and distributing the water. Prerequisites, 211 and 212. Two hours attendance, two credits, first semester, senior year. Lectures. Elective. Mr. House

217.—Drainage—An investigation of alkalied and seeped lands, the cause and remedy for this condition; an investigation of different drainage systems and the proper installation and operation of the same. One hour attendance, one credit, second semester, senior year. Prerequisites, 211 and 212. Elective. Mr. House

218.—Dams—The principle of stability of dams, the methods of dam construction, and the materials to be used. The selection of the proper site for the dam and all the necessary work of design, location, and construction are treated at length. Prerequisites, 211 and 212. Two hours attendance, two credits, second semester, senior year. Lectures. Required. Mr. House

219.—Strength of Materials—This course is the application of the principles of mechanics to the investigation of the stress in and strength of the various materials used in construction. The laws of stress in simple, cantilever, and continuous beams, in materials in direct tension or compression, and in columns and struts, are investigated. Torsion in shafts, stresses in pipes under pressure, strength of riveted joints, simple and combined stresses, temperature stresses, laws of elasticity, resiliance in work, are treated in length. Numerous problems illustrate the practical application of theoretic truths and laws. The general characteristics of the principal materials, wood, iron, cement, concrete, and steel are discussed. Prerequisites, physics and integral calculus. Five hours

Shaded Path on College Farm

attendance, five credits, first semester, junior year. Text, Merriam's "Mechanics of Materials." Required in Division of Engineering.

Mr. Pennock

220.—Testing Laboratory—Taken with 219. Actual tests of the tensile and compressive strengths of specimens are made on a 50,000-pound testing machine. Flexural tests are made and give data for computing the Modulus of Elasticity of the tested material. A discussion of the materials of engineering is included. Two hours attendance, one credit, first semester, junior year. Elective. Fee, $1.00.

Mr. Pennock

221.—Trusses and Bridges—In this course the methods of computation of the stresses on roof and bridge trusses are applied. The common forms of trusses, such as the Howe, Pratt-Warren, Baltimore, Bowstring, and Parker are investigated under the dead and live loads and the stresses in different members are figured. Live load stresses are figured for both uniform load and concentrated axle loads. Prerequisites, 219, 220. Four hours attendance, four credits, first semester, senior year.

Mr. Pennock

222.—Concrete—Under this head, the whole subject of concrete and concrete construction is investigated. The materials used, the proper proportions, the correct manner of mixing, reinforcing and placing, all receive careful attention. Concrete structures of all kinds are carefully considered. Prerequisite, 219. Two hours attendance, two credits, second semester, senior year. Elective. Text, Taylor & Thompson's "Concrete."

Mr. House

223.—Engineering Design—The student is required to select, either from his own ideas, or with the advice and assistance of the professor, some engineering project, to design the same, and submit working drawings for it. Prerequisites, 212 and 219. Six hours attendance, three credits, first semester, senior year. Lectures and drafting. Required.

Mr. House

224 and 254—Contracts and Specifications—The part that engineers are frequently called upon to play in making of contracts and the writing of specifications makes this subject necessary. In this course the student is taught the essential elements in the writing of contracts and specifications. One hour attendance, one credit, first semester, senior year. Required. Text, Johnson's "Contracts and Specifications."

Mr. Thomas and Mr. Pennock

225.—Highway Construction—This deals with the methods of modern road construction. Special attention is given to earth roads, their location, drainage, and repair. Two hours attendance, two credits, second semester, senior year. Elective. Text, Frost's "Art of Road Making."

Mr. House

226, 227, 228, 229.—Seminar—Seminar work is given in the last two years of the course and consists in the preparation of papers on engineering problems and on the construction of engineering works. These papers are read before the class and discussed. The object of the

work is to encourage as much outside reading as possible, and to make the student conversant with the engineering feats of the present day. Elective. One hour attendance, one credit each semester.
Mr. House and Mr. Pennock

230.—Thesis—In the senior year, a suitable thesis is required upon some engineering project. This is required of all students in the department. Second semester, senior year, two credits. For seniors only.
Mr. House

231.—Irrigation Laboratory—This work takes up the testing of different irrigation structures such as flumes, pipes, headgates, pumps, etc. First semester, senior year, four hours attendance, two credits. Prerequisites, 211 and 212. Elective. Fee, $1.00. Mr. House

232.—Irrigation Laboratory—This subject consists of advanced work in the irrigation laboratory and irrigation work in the field. Prerequisite, 213. Six hours attendance, three credits, second semester, senior year. Fee, $1.00. Mr. House

233.—Graphic Statics—This is taken up with 221 Roofs and Bridges, and treats of the elementary principles of equilibrium of forces and also the graphical determination of center of gravity and moment of inertia. The graphical solution of the stresses in simple roof trusses and bridges. Prerequisites, 219 and 221. One hour attendance, one credit, second semester, senior year. Elective. Text, Merriman & Jacoby, Part II. Mr. Pennock

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DEPARTMENT OF ENGLISH AND HISTORY

B. F. COEN	Professor
W. R. THOMAS	Associate Professor
VIRGINIA H. CORBETT	Associate Professor
ELEANOR CRAIG	Instructor
ALFRED WESTFALL	Instructor

251.—Economics—Treats of topics of practical interest and importance to all who are engaged in productive industries; markets, transportation, labor, capital; money standards and the currency, banks and banking, taxation and public expenditures. Partially from the text and partially by lectures. Required in courses of Agronomy, Animal Husbandry, and General Science, first semester, senior year. Two hours attendance, two credits. Text, Seager's "Political Economy."
Mr. Thomas

252.—Sociology—An investigation into the various social conditions of the times, the relations of the individual to all the factors of modern civilization, the influence of these factors one upon another, and the part which each person plays in the social, educational, commercial, moral, and religious life of the community. Required in the General Science and Home Economics courses, first semester, junior year. Five hours attendance, five credits. Text, Small & Vincent's "Study of Society." Mr. Thomas

253.—Irrigation Law—A study of the history, growth, and development of irrigation statutes in all states where the artificial use of water is necessary for the production of crops. Special attention is given to the controlling opinions of the supreme courts of Colorado and of the United States. Required of students in Agronomy, Animal Husbandry, Entomology, and Irrigation Engineering. Students below junior standing may not elect this subject except by special permission. Two hours attendance, two credits, second semester, senior year. Text, Mills' "Manual of Irrigation." Mr. Thomas

254.—Contracts—Laws governing engineering contracts. Required in Civil and Irrigation Engineering course, first semester, senior year. One hour attendance, one-half term, one-half credit. Text, "Johnson on Contracts." Mr. Thomas

255.—Medical Jurisprudence—A course of lectures on the law governing the practice of Veterinary Medicine, and the laws and regulations—state and national—governing the transportation of live stock. Required in the Division of Veterinary Medicine, first semester, senior year, one hour attendance, one credit. Mr. Thomas

256.—Constitution of the United States—Instruction is given concerning the events and causes which led to the formation of the national government as it exists today, and the same traced to their historic sources. The workings of the federal government, together with its relations to the states, are also amply illustrated by frequent class lectures. Such information is due at the hands of every institution maintained by state or national aid as tending to better fit its graduates for the duties of citizenship, and for the responsibilities, of a republican form of government, which rest with especial weight upon those who have received their education free at the hands of the state or nation. Required in the Division of Mechanic Arts. Three hours attendance, three credits, first semester, sophomore year. Text, Hinsdale's "American Government." Mr. Thomas

257.—Industrial History—The development of the complex industrial life of today. The course includes a review of industrial conditions in primitive England, of the days of the English manor, follows the changes which produced the guild organizations, the domestic system of industries in the United States, the changes resulting from the factory system, and the consequent labor conditions. Elective. First semester, three hours attendance, three credits. Text, "Industrial History of the United States," by Coman, supplemented by library reference work, and first hand study of some phase of industrial life by each member of the class. Mr. Thomas

258.—Advanced History—Study and practice in historical investigations; the laws governing human action; reciprocal influences of religion, literature, and government; comparisons and criticisms of past civilizations and their relation to modern progress. Lectures and library readings. Required in General Science and Home Economics courses.

Two hours attendance, two credits, first semester, senior year. Text, Adams' "European History." Mr. Thomas

259.—Advanced History—Continuation of 258. Two hours attendance, two credits, second semester, senior year. Mr. Thomas

260.—English History—Valuable as a preparation for work in English literature, constitutional history, and political economy. The industrial development of the English people receives particular attention. Collateral readings from the leading authorities will be furnished by the library. Alternative in Home Economics and General Science courses. Second semester, sophomore year, three hours attendance, three credits. Text, Walker's "Essentials of English History."
Mr. Thomas

262.—English—Study of the principles of rhetoric. Elements of effective writing in prose based upon the study of selected authors. Analysis of modern prose. Much time is devoted to composition, written and oral. One long theme, 75 to 150 pages, is written during the year. The student must work out very complete plans, must become well acquainted with the library, and must learn to distinguish between the essential and non-essential in books and magazines. Required of freshmen in all courses except the Veterinary. First semester, three hours attendance, three credits. Texts, Bates' "Talks on Writing English," (first series), Woolley's "Handbook of Composition," and Berkeley's "Writing From Models." Mr. Coen, Miss Craig, and Mr. Westfall

263.—Continuation of English 262—Second semester, three hours attendance, three credits. Mr. Coen, Miss Craig, and Mr. Westfall

264.—Argumentation—Time is given to practice in argumentation and debate. Freshman English, prerequisite. Required of sophomores in the Agricultural division and in the General Science and Home Economics courses. Elective in other courses. First semester, two hours attendance, two credits. Text, Foster's "Argumentation and Debating."
Mr. Coen and Mr. Westfall

265.—Argumentation—Continuation of 264, Argumentation. About half of the time will be given to practice work. Second semester, three hours attendance, three credits. Mr. Coen and Mr. Westfall

266.—Practical English—A short course in every day problems in English, the problems that men and women meet daily. Required of General Science seniors. Elective for other students. Freshman English, prerequisite. One hour attendance, one credit, first semester.
Mr. Coen

267.—Development of Modern English—This course aims to show something of the development of the English language, taking up inflection, sounds, words, and grammar. Freshman English, prerequisite. Three hours attendance, three credits, second semester. Elective.
Mr. Coen

268.—English Literature—A course in literature arranged for technical students. The general purpose of this course is to arouse an interest in good books, to develop the ability to judge their literary value, and to stimulate a desire for more knowledge of literature. One aim of the course is to familiarize the student with the arrangement and use of the college library, and to supply a working knowledge of its equipment, which may guide his reading during the college course and later. Required in all courses but Veterinary Medicine. First semester, freshman year, two hours attendance, two credits. Text, Newcomer's "Twelve Centuries of English Poetry and Prose."

Miss Corbett and Miss Craig

269.—Continuation of 268—Two hours attendance, two credits, second semester, freshman year.

Miss Corbett and Miss Craig

270.—The Drama—Lectures are given on the principles of dramatic art, with particular attention to character study, plot development, and the contrast between ancient classics and modern romantic drama. Illustrative readings are used in class, several plays of Shakespeare being studied as models of dramatic art. Prerequisite, freshman English. Two hours attendance, two credits, first semester. Elective.

Miss Corbett or Miss Craig

271.—American Literature—A study of the literary periods in our country, from colonial times to the present. Selections from the prominent American writers are chosen for class study, and additional library readings with reports are expected. Required in the General Science course, second semester, junior year. Two hours attendance, two credits. freshman English, prerequisite. Text, Simond's "History of American Literature."

Miss Corbett or Miss Craig

272.—Advanced Course in English Literature—Masterpieces from the poets of the seventeenth, eighteen, and nineteenth centuries form the basis for class study. Collateral readings with reports are expected. Required in Home Economics and General Science courses. First semester, senior year, three hours attendance, three credits.

Miss Corbett or Miss Craig

273.—English Literature—This is a continuation of 272. Special

Across the College Farm to the Foothills study is given to English prose forms. The works of the essayists and critics are followed by a study of English and American fiction. The novel is considered. Its structure and place in literature, and its service as a laboratory for character study are subjects for lectures. Special study is made of the short story. Required in courses in Home Economics and General Science. Five hours attendance, five credits, second semester, senior year. Miss Corbett or Miss Craig

274.—History of Education—Educational development of the races. Many of the problems are taken up. Of special value to students that expect to teach. Elective. Five hours attendance, five credits, first semester. Text, "History of Education." (3 volumes) by Graves.
Mr. Coen or Mr. Westfall

275.—Psychology—A course in the elements of psychology. Study of the mind and its activities. Required of Home Economics and General Science juniors. Should be elected by students that expect to teach, or others interested in their own mental development. Five hours attendance, five credits, second semester, junior year. Text, Betts' "The Mind and Its Education," and one other.
Mr. Coen or Mr. Westfall

276.—School Management—A course in the general principles of school management. Offered for those students that expect to teach. Elective, second semester, senior year. Three hours attendance, three credits. Text, Bagley's "Classroom Management," and Pyle's "Educational Psychology." Mr. Coen

277.—Practical English—Continuation of 266. Elective, second semester, one hour attendance, one credit. Freshman English, prerequisite. Mr. Coen

ENTOMOLOGY AND ZOOLOGY

CLARENCE P. GILLETTE	Professor
S. ARTHUR JOHNSON	Associate Professor
*CHAS. S. MEAD	Associate Professor
GEORGE M. LIST	Instructor
W. L. BURNETT	Curator

301.—Physiology—Required in the Agriculture, Home Economics, and General Science divisions. Three hours attendance, three credits, second semester, freshman year. Text, "The Human Mechanism," Hough and Sedgwick. Mr. Johnson

302.—Zoology—Required of the Agricultural Group and in Veterinary Medicine, alternative with mathematics in Home Economics and General Science courses. First semester, sophomore year, three hours attendance, three credits. Text, "College Zoology," by Hegner.
Mr. Johnson

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*Deceased.

303.—Elementary Entomology—Required of students in Entomology, Horticulture, and Forestry. A study of the structure, habits and classification of the insect kingdom. Special attention is given to the habits of the more injurious species and the remedies that may be used to destroy them or prevent their depredations. Field excursions for observing insects under natural conditions. Classification and mounting of insects for permanent preservation. Over 100,660 mounted specimens of insects in the college collection. First semester, junior year, three hours class, three credits, and four hours laboratory, two credits. Text, "Elementary Entomology," by Sanderson and Jackson."
Mr. Johnson

304.—Embryology—Required in the Divisions of Agriculture and Veterinary Medicine. Study of the early stages in development, the general principles underlying the development of organic beings, and the laws of inheritance. Many references to outside reading will be given. First semester of the senior year. One hour attendance, one credit.
Mr. Gillette

305.—Forest Insects—A series of lectures on insects injurious to forest trees. Required in the Entomology course, second semester, senior year. Two hours attendance, one credit. Mr. Gillette

306.—Advanced Entomology—Required in the Entomology course, first semester, senior year, ten hours attendance, five credits. Text, Comstock's "Manual for the Study of Insects."
Mr. Johnson and Mr. List

307.—Advanced Entomology—Continuation of 306. Second semester, senior year, ten hours attendance, five credits.
Mr. Johnson and Mr. List

308.—Ornithology—A brief course in popular study of birds with their economic relations. Two hours attendance, two credits, second semester. Elective. Text, "Bird Life," by Chapman.
Mr. Johnson

309.—Zoology Laboratory—Stress is laid upon the structure, habits, and relationships of the different groups of the animal kingdom. Defineteness and accuracy of observation required. Required of students in the divisions of Agriculture and Veterinary Medicine. Four hours attendance, two credits. Fee, $1.00. Mr. Johnson

310.—Zoology Laboratory—Same as 309, but required in Home Economics and General Science group, four hours attendance, two credits. Fee, $1.00. Mr. Johnson

311.—Genetics—One lecture a week during the first semester in the senior year, dealing with the broad principles of development, the laws of heredity, and the application of these laws to the improvement of living things. Required in the divisions of Agriculture and Veterinary Medicine, one hour attendance, one credit.
Mr. Gillette

312.—Eugenics—A course of ten lectures offered to women students in the upper classes. Relates to the most recent discoveries in human heredity and the application of the laws of heredity to human progress. Mr. Gillette

313.—Biological Entomology—A course in the biological aspects of entomology. Three recitation and two laboratory periods each week, five credits, second semester, elective. Text, “Entomology in Its Biological and Economic Aspects,” by Folsom. Mr. Gillette and Mr. Johnson

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HOME ECONOMICS

INGA M. K. ALLISON	Professor
CHARLOTTE E. CARPENTER	Instructor
MIRIAM H. HAYNES	Instructor
FLORENCE M. BARLOW	Instructor
LOUISE PECK	Instructor
AGNES UPSON	Assistant

351.—House Management and Sanitation—The care of the house from economic and sanitary standpoints; household accounts; the purchase of working equipment and supplies; the ventilation, heating, and lighting of the house; the water supply; the disposal of wastes; the relation of the householder to health organizations; the home as a social center; rules for conduct. Lectures, recitations, laboratory practice. Required of General Science and Home Economics students, four hours attendance, four credits, first semester, freshman year. Miss Peck

352.—Domestic Architecture and House Furnishing—The site, surroundings and construction of the house; house plans suited to typical community conditions. Practice in drawing skeleton plans and elevations. Consideration of furnishings from sanitary and artistic viewpoints. Lectures, class discussions, collateral reading. Prerequisite, House Management and Sanitation. Five hours attendance, five credits, second semester, freshman year. Required of General Science and Home Economics students. Miss Peck

353.—Personal Hygiene—The principles and preservation of health; the causes and preventatives for prevailing ills. Physiology and

Guggenheim Hall

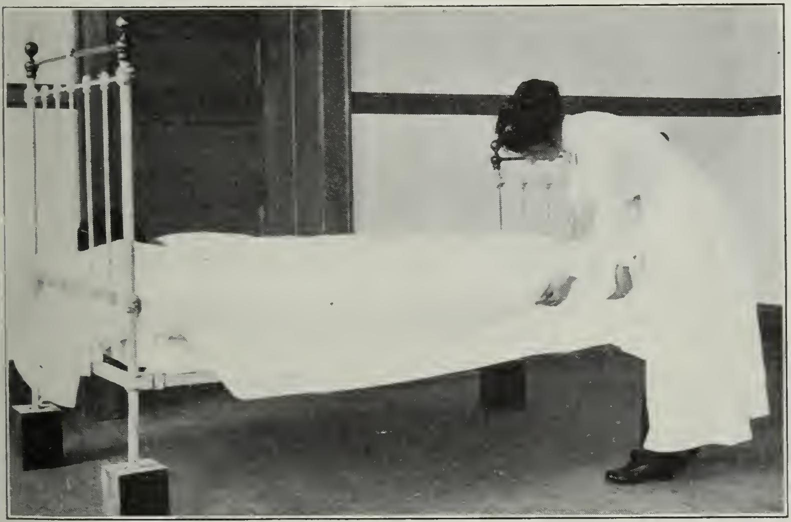
Personal Hygiene are offered as an alternative with mathematics. Two hours attendance, two credits, second semester, freshman year.

Mrs. Upson

354.—Home Nursing—Includes the study of what to do in emergencies; the care of the sick, and the general care of the sickroom. Lectures and practical demonstrations. Required of Home Economics students, two hours attendance, two credits, first semester, senior year. Textbook, McIsaac's "Nursing Technique." Mrs. Upson

360.—Foods I—This course is intended as a preparation for later courses in foods, introducing the student to processes involved in cookery. Emphasis is placed on manual dexterity. Economy of labor through thoughtful use of utensils together with speed and quiet will characterize the work. Cookery is limited to the preparation of simple dishes, with special stress on seasoning, flavor, and attractiveness. Required of all Home Economics students not presenting entrance credits in domestic science. Four hours attendance, two credits, second semester, freshman year. Fee, $2.00. Laboratory manual outlined by the department. Miss Haynes and Miss Peck

361.—Foods II—This course serves as a basis for all later work in foods. Composition and characteristics of food stuffs; underlying principle in methods by which heat is applied to food stuffs; consideration of uses and relative values of various types of cooking apparatus; selection of foods; significance of terms "brands" and "blends." Required of General Science and Home Economics students. Prerequisite, 151, 153, Inorganic Chemistry. Six hours attendance, three credits, first semester, sophomore year. Fee, $2.00. Textbook, Hutchison's



Making an Invalid's Bed

"Food and Dietetics." Laboratory manual outlined by the department.
Miss Haynes

362.—Foods III—Continuation of Foods II. Four hours attendance, two credits, second semester, sophomore year. Fee, $2.00.
Miss Haynes

363.—Foods IV—The further development of principles and methods outlined in Foods II and Foods III. Food preservation; tests for adulteration; pure food laws. Extensive work with flour mixtures, including bread, cakes, and pastry. Required of Home Economics students electing the Domestic Science course. Prerequisite, Foods III. Preceded or accompanied by 155-157 Organic Chemistry. Eight hours attendance, four credits, first semester, junior year. Fee, $4.00. Laboratory manual outlined by the department. Miss Peck

364.—Dietetics—Includes a consideration of dietary standards, balanced ration; relation of food to health; special consideration of the adjustment of quantity and quality of food necessary to the meeting of the varying conditions of age, occupation, health, etc. Required of Home Economics students electing Domestic Science. Prerequisites, Foods IV and Organic Chemistry. Four hours attendance, two credits, first semester, senior year. Miss Allison

365.—Serving of Meals—This course provides for the application of principles developed in courses in foods, including the cooking and serving of meals, and the preparation of school and picnic lunches. Wholesomeness of food served, attractive serving, and the estimate of cost of food prepared are invariable features of the work. Required of Home Economics students electing Domestic Science. Prerequisites, Foods IV and Dietetics. Six hours attendance, three credits, second semester, senior year. Fee, $2.00. Laboratory outline supplied by the department. Miss Allison

366.—Problems in Dietary Calculation—An advanced course in Dietetics to be carried on as a laboratory course. Elective. Four hours attendance, two credits, second semester, senior year. Prerequisite, 364. Fee, $2.00. Laboratory manual "A Laboratory Hand-book for Dietetics," Mary Swartz Rose. Miss Allison

375.—Sewing I—The making of models by hand, demonstrating the elements of hand sewing with their application on single garments, the use of machines; making of machine models, showing the use of attachments. Required of Home Economics students. Six hours attendance, three credits, first semester, freshman year. Fee, $1.00.
Miss Barlow

376.—Sewing II—The making of a suit of underwear. The making of a tailored waist. Required of Home Economics students. Four hours attendance, two credits, second semester, sophomore year. Prerequisite, Sewing I. Fee, $1.00. Miss Barlow

377.—Textiles I—Study of historical development of textile industries; consideration of economic and hygienic aspects of textiles; microscopic and chemical tests for physical and chemical characteristics;

dyeing; laundering. Required of Home Economics students electing Domestic Art. Four hours attendance, two credits, first semester, junior year. Prerequisites, Sewing I and II. Preceded or accompanied by Organic Chemistry. Fee, $1.00. Textbook, "Textiles," by Woolman and McGowan. Miss Barlow

378.—Textiles II—Continuation of Textiles I. Four hours attendance, two credits, second semester, junior year. Fee, $1.00. Miss Barlow

379.—Drafting—Drafting and testing of patterns, and application of the draft in a simple house dress. Required of Home Economics students electing Domestic Art. Six hours attendance, three credits, first semester, junior year. Prerequisites, Sewing I and II. Fee, $1.00. Miss Carpenter

380.—Dressmaking I—Designing of garments and the making of a simple wool dress. Required of all Home Economics students electing Domestic Art. Four hours attendance, two credits, second semester, junior year. Prerequisites, Textiles I and II, and Design and Drafting. Fee, $1.00. Miss Carpenter

381.—Dressmaking II—Further application of principles set forth in 379 and 380, with especial consideration of line and color. The making of an afternoon gown, using light weight fabrics. Elective for Home Economics students electing Domestic Art. Six hours attendance, three credits, second semester, senior year. Prerequisite, Dressmaking I. Fee, $1.00. Miss Carpenter

Guests and Hostess in Serving of Meals Class

382.—Art Needle Work—Making of needle work sample book; design and practical work in embroidery. Required of Home Economics students electing Domestic Art. Four hours attendance, two credits, second semester, senior year. Prerequisites, Sewing I and II. Fee, $1.00. Miss Barlow

383.—Millinery—The making and covering of a buckram frame; the making of a wire frame and sewing of straw braid. Required of Home Economics students electing Domestic Art. Four hours attendance, two credits, first semester, senior year. Prerequisites, Sewing I and II. Fee, $1.00. Miss Carpenter

384.—Tailoring—The making of a wool, tailored suit. Elective. Four hours attendance, two credits, first semester, senior year. Prerequisite, Dressmaking I. Fee, $1.00. Miss Carpenter

390.—Demonstration Course—This course provides an opportunity for the student to present in a public way problems in cookery, laundry practice, and sewing. Demonstrations that shall suit typical state conditions are planned and given by the individual student. Required of Home Economics students. Prerequisites, Foods I, II, III. Four hours attendance, two credits, second semester, junior year. Fee, $2.00.

Miss Allison and Miss Carpenter

391.—Teachers' Course—In this course there is included a consideration of methods of presentation, the principles underlying the planning of curricula and equipment, practice in planning of curricula and equipment to meet typical conditions in the state, and observation of teaching in the School of Agriculture at the college, and of teaching in nearby towns. Required of all Home Economics students. Three hours attendance, three credits, first semester, senior year. Prerequisite, courses in Home Economics offered in the freshman and sophomore years. Textbook, "Domestic Art in Woman's Education," Cooley.

Miss Allison and Miss Carpenter

392.—Household Economy—The historical development of the home; the present relation of the home to the community; problems of the modern household, economic, social, and legal. Open to junior and senior students. Two hours attendance, two credits, second semester.

Miss Allison

393.—Special Problems—Gives an opportunity for the consideration of special problems that arise along home economics lines, and for which students are prepared by training and prerequisite work of the first three years of college. Elective. Four hours attendance, two credits, second semester, senior year. Fee, $2.00.

Miss Allison and Miss Carpenter

394.—Camp Cookery—The selection and preparation of food supplies especially suited to camping conditions. Offered to men. Two hours attendance, one credit, second semester. Fee, $2.00.

Miss Allison and Miss Haynes

HORTICULTURE

E. P. SANDSTEN	Professor
R. A. McGINTY	Instructor
*JULIUS ERDMAN	Instructor

401.—Plant Propagation—This subject is required in the Agricultural division. It is designed to give the student a simple knowledge of the methods and practices employed in propagating plants for the greenhouse, garden, and orchard. Four hours attendance, two credits, second semester, sophomore year. Text, Bailey's "Nursery Book."
Mr. Sandsten

403.—Vegetable Gardening—The history, development, classification, methods of improvement and culture of the garden vegetables, small fruits, etc., are studied. Especial attention is given to adaptability of the various garden crops for commercial production in the different districts of the mountain states. This includes the cabbage, cauliflower, celery and strawberry industries here, and their relation to these crops in other places. Three hours attendance, three credits, second semester, junior year. Required in Horticulture. Text, "Garden Farming," Corbett.
Mr. McGinty

404.—Orchard and Garden Craft—This work is designed to give the student practice in the field in setting and pruning fruit and ornamental trees, changing varieties in fruits in the orchard by grafting and budding, and in the field work in gardening. Elective. Four hours attendance, two credits, second semester, junior year.
Mr. Sandsten and Mr. McGinty

405.—Pomology—This includes a general study of the classification, history, principles, and practices of fruit growing with special

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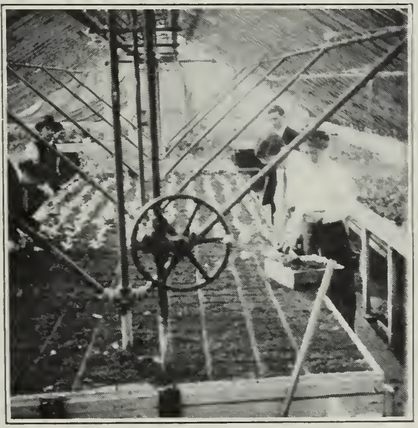
*Resigned.



In the Greenhouse

reference to the conditions in the irrigated Rocky Mountain fruit districts. Required of horticultural students, first semester, senior year, three hours attendance, three credits. Mr. Sandsten

406.—Pomological Laboratory—A study of fresh specimens of fruit and of fruit leaves, buds, etc., is made in the laboratory; so as to acquaint the student with the different standard varieties, their peculiarities of growth, etc. Occasional visits are made to orchards in the vicinity of the college for the purpose of studying the work in the field. Required of horticultural students, one-half first semester, senior year, four hours attendance, one credit. Fee, $1.00. Mr. Sandsten

407.—Thesis—This subject follows Pomological Laboratory, the last half of the first semester of the senior year. The work consists of original investigation of some horticultural subject under the direction of the head of the department. The equivalent of two hours a day twice a week is required. The data of the experiments connected with this work must be completed by the middle of the second semester of the senior year. Elective. One credit. Mr. Sandsten

408.—Floriculture—This subject typifies the most intensive form of horticulture. The work consists of lectures on the composition of soils for growing plants in limited areas, the evolution of flower forms,

Horticultural Hall and Greenhouse

colors, and the methods of manipulation of plants to secure the greatest size, beauty, and quantity of flowers from a small area of space. The work will also cover the history, classification, propagation, and culture of the more imporant florists' crops and general greenhouse construction and management. This subject is required of horticultural students, first semester, senior year, two hours attendance, two credits. Mr. McGinty

409.—Floriculture Laboratory—Floriculture laboratory is given in connection with floriculture. In this work the student is required to learn the names, habitat, history, and culture of the more common florist and greenhouse plants. Required of horticultural students, first semester, senior year, two hours attendance, one credit. Mr. McGinty

410.—Landscape Gardening—Landscape gardening follows floriculture, second semester, senior year, required of students in horticultural course. The subject consists of a discussion of the principles of landscape architecture, with special reference to the laying out and care of the home grounds, parks, etc. This subject might be classed as a cultural subject, in that it covers the principles of painting, sculpture, and architecture with particular reference to the blending of forms and colors. It also includes a study of plant materials that may be used in the arid climates of the West and the effects obtained by their judicious use. Two hours attendance, two credits. Mr. Sandsten

411.—Landscape Gardening Laboratory—This subject is given in connection with Landscape Gardening, and is designed to give the student a working knowledge in measuring and laying out the planting for home grounds, parks, etc., and to familiarize him with plants used for outside decorative purposes. Required of horticultural students. Second semester, senior year, two hours attendance, one credit. Mr. McGinty

412.—Pomology Seminar—This subject consists of the study of the horticultural literature, such as bulletins, fruit and garden papers, and a prescribed course of reading of horticultural books. Discussions of the various subjects will accompany this reading. Required in the Horticulture course. Four hours attendance, two credits, second semester of the senior year. Mr. Sandsten

413.—Experimental Horticulture—This course is designed to give students specializing in horticulture an insight into experimental methods, tabulating results, and presenting the same in bulletin form. Three hours attendance, three credits, second semester, senior year. Mr. Sandsten

414.—Plant Evolution and History of Cultivated Plants—A critical review of past and current literature on plant evolution, and a detailed study of horticultural plants, their origin, and economic importance. Two hours attendance, two credits, second semester, senior year. Mr. Sandsten

LANGUAGE

SARAH I. KETTLE........................Professor

451, 452.—First Year French—A course in grammar, prose composition, reading and conversation. Alternative, required of sophomores in General Science and Home Economics courses. Five hours attendance, five credits each semester. Text, Chardenal's "Complete Course." Selected reading. Miss Kettle

453, 454.—Second Year French—A course in reading and conversation. This includes a critical study of modern French prose and scientific literature. Alternative, required of juniors in General Science course. Prerequisites, 451, 452. Five hours attendance, five credits each semester. Miss Kettle

455, 456.—First Year Spanish—A course in grammar, prose composition, reading and conversation, with especial emphasis placed on making this language of practical use to those whose work will take them among Spanish speaking people. Alternative, required of sophomores in General Science and Home Economics courses. Five hours attendance, five credits each semester. Text, Hills and Ford's "Spanish Grammar." Miss Kettle

457, 458.—German—Offered for those who wish to continue the subject in college. This course aims to make a practical application of the German already studied and includes prose composition, conversation, and the reading of current literature, especially scientific bulletins and newspapers. Alternative, required of juniors in General Science. Prerequisite, a good general knowledge of German grammar. Five hours attendance, five credits each semester. Miss Kettle

Note: The five hour courses in second year French and German are divided into divisions of three hours and two hours. Students may elect one without the other.

LIBRARY

CHARLOTTE A. BAKER...................Librarian
MARION V. HIGGINS......................Assistant
CLARA A. GLIDDEN......................Assistant

The College Library was founded in 1878 from books given by the faculty and interested citizens of Fort Collins. This has been increased each year by funds from the college income, and also by occasional gifts. These gifts now consist of the Annie Jones, Louis B. France, and Barton O. Aylesworth collections, with the Theodosia Ammons Memorial Library.

Beginning with 1901, the library began to grow rapidly and in 1905 was moved from the small room in the main building to the building vacated by the commercial department. Later a gallery and a mezzanine floor were added. Recently the north and south basements have been shelved to use as stack rooms.

The College Library, which now contains 32,477 volumes and 26,000 pamphlets, consists of the general library, and eleven departmental libraries. The Experiment Station has its own library, and is not considered here. The general library is largely a reference collection, although certain books are lent. There is no fixed period for lending a book, as the time varies with the demand for a volume. Professors frequently request that books on a certain topic shall be kept in the library for reference part or all of the time. It frequently happens that a book which may be lent at one time for two weeks, later in the term may not be lent at all, or only from six at night until nine the following morning.

The Dewey decimal classification is used, and a dictionary catalogue is well along. This includes the books of all departmental libraries, all purchases since 1901, all of fiction, and all of biography, history, and literature. Other classes are to be added as time permits of doing this back work. At present this catalogue has nearly 60,000 cards.

The sheep bound serial set of congressional documents, the publications of the U. S. Department of Agriculture, the Geological Survey and the Smithsonian Institution are represented in this catalogue, as well as other important serials. Where it is possible, printed cards are bought from the Library of Congress and other sources. Otherwise cards are typewritten.

The library subscribes to one hundred and thirty-five periodicals, and receives as donations many agricultural journals and state newspapers. Students can arrange to see their home paper by requesting said paper to place the College Library on its free list. In return the paper will receive News Notes, which is a weekly publication issued for the press, by the college.

On the shelves of the reference room can be found the leading standard reference books and the bound files of many of our best periodicals. To aid in the use of the latter, we have **Poole, The Readers'**

The College Library

Guide, Readers' Guide Supplement, Industrial Arts Index, and other less known periodical indexes.

We hope to make this a strong scientific library, and we are trying to intensify along the lines of agriculture, engineering, house economics, public health, and industrial and agricultural education. The selection of books is carefully made with the aid of the faculty. It is the aim of the institution to gather a library which will form a broad collection of practical working material of permanent worth.

DOCUMENTS

By U. S. law, all agricultural colleges are depositories. This means that we are "authorized to receive copies of every publication printed by the Government and made for distribution. The average annual distribution of such libraries is about 1,000 books and pamphlets, requiring 50 feet of shelf space per year to accommodate them. All such books and documents when received at the proper libraries shall be kept there and not removed from such places."

This collection is for reference, and cannot be lent. In addition to the cards in our catalogue for the document sets mentioned above, we have a good collection of printed government catalogues and various monthly lists. We also have a special catalogue for all the publications issued by the various experiment stations of the United States and territories.

Our sets of agricultural documents are unusually complete for any section, and especially for the West. We expect to add largely to our collection of state documents during the coming year.

Besides the services with documents, the library gladly offers its assistance to libraries and individuals who wish to collect or purchase such material.

Use of Books.—This course teaches by means of lectures and practical problems, the use of catalogues, indexes, reference books, etc. A bibliography on some subject is required from each student. Student assistants for the library will be selected from those taking this work. The permission of the librarian is required before students may register for this course. Elective. One recitation, five hours laboratory work, two credits. The recitation is prepared during the laboratory time.

How to Use the Library

A student must register in the library if he wishes to use the library or borrow books. To do this, he should present his registration receipt or athletic card. It is best to attend to this during the first two days of college when one is presenting the registration receipt at classes.

A library fee of $2.00 is charged each student when he registers. A fine of five cents a day is charged for overdue books. "Reserved books" are lent for one hour with a fine of ten cents for each quarter-hour overdue.

Residents of Fort Collins may borrow books by paying a fee of $2.50 per year or ten cents a volume.

Desks are arranged in the north stack for the use of students who wish to study together.

In the reference room and periodical room in the south wing, students are expected to consider the comfort of people who come in for quiet study.

Miscellaneous Information

The library staff is for the use of the students, and it will cheerfully give all assistance possible to the student body. As this is a small library, the staff must be busy with clerical work at odd minutes, but this work is to be dropped whenever a student needs help. No student should hesitate to make his wants known.

The library is open from 8:00 a. m. to 9:00 p. m., excepting a noon hour, 12:30 to 1:00, and a supper hour, 5:45 to 7:00.

On Saturdays, the library is open from 8:30 a. m. to 5:30 p. m., but it is not open on Sundays.

Holiday hours, which are announced from time to time are 9:00 to 12:00 a. m., and 1:00 to 4:00 p. m.

PERIODICALS DONATED TO THE LIBRARY

Agricultural Gazette of New South Wales
Agricultural Journal of India
Agricultural Southwest — Wichita, Kansas
American Breeder's Magazine—Washington, D. C.
American Cultivator—Boston
American Food Journal—Chicago
American Issue
American Poultry World—Buffalo, N. Y.
American Poultryman—Lincoln, Neb.
American Swineherd—Chicago
American Wool and Cotton Grower—Boston
Anaconda World—Franklinville, N. Y.
Berkshire World—Springfiefild, Ill.
Bit and Spur—N. Y.
Boston Public Library Bulletin
Brooklyn Public Library Bulletin
Bulletin of the Carnegie Foundation
Bulletin of the New York Botanical Gardens
Canadian Poultry News — Owen Sound, Ontario
Canadian Horticulturist—Peterboro, Ontario
Canal Record
Canned Goods Trade—Baltimore
Carlson's Breeders—Norfolk, Neb.
Champion—Fort Collins, Colo.
Child and Animal Protection
City Farmer—Columbus
City of Denver
Clay, Robinson & Co.—Live Stock Reports—Chicago
Cold Storage
Colorado Dairyman—Fort Collins
Colorado Engineers' Magazine
Colorado Farmer—Fort Morgan
Colorado Fruit Grower — Grand Junction
Colorado University Studies
Conn. State Geological and Natural History Survey
Cornell Reading Course for Farmers
Dakota Farmer—Aberdeen
De Laval Monthly—N. Y.
Dodge Idea—Mishawaka, Ind.
Duroc Bulletin—Peoria, Ill.
Elgin Dairy Record—Elgin, Ill.
Engineers' Society of Western Penn. (Proceedings)
Farm and Breeder—Sioux City
Farm and Fireside—Springfield, O.
Farm and Orchard—Keyser, Ill.
Farm Poultry—Boston

Farmers' Advocate—Topeka
Farmers' Digest—Columbia, Penn.
Farmers' Review—Chicago
Farmers' Voice—Chicago
Field and Farm—Denver
Gas Review—Madison
Gefluegel-Zuechter—Hamburg, Wis.
Hacienda—Buffalo, N. Y.
Harvester World
Hoard's Dairyman—Ft. Atkinson, Wis.
Holstein Friesian Register—Battleboro, Vt.
Hood Farm News—Lowell, Mass.
Independent Farmer
Indiana Farmer—Indianapolis
Intermountain Poultry Advocate—Colorado Springs
Iowa Library Commission Quarterly
Iron Age—Grenlock, N. J.
Jewish Outlook—Denver
Journal of Department of Agriculture of Western Australia
Journal of Western Society of Engineers
Kansas Farmer—Topeka
Kentucky Trotting Record
Kimball's Dairy Farmer—Waterloo, Iowa
Kistler's Komments—Denver
Lamar Commercial Club Association Bulletin
Lariat—Denver
Layman Printer
Mark Lane Express Agricultural Journal & Live Stock Record—London
Milk Reporter—Sussex, N. J.
Missouri Valley Farmer—Topeka, Kansas
Monthly Catalog of U. S. Public Documents
Museum News
Natal Agricultural Journal
National Farmer—St. Louis, Mo.
National Harness Review—Chicago
National Poultry Magazine—Buffalo
Nature Guard
Nebraska Farmer—Lincoln
New York Public Library Bulletin
New York State Museum Bulletin
North Carolina Library Commission Reporter
Orchard and Farm—San Francisco
Pacific Fruit World—San Francisco
Pan American Union Bulletin
Peru To-day—Lima
Philippine Agricultural Review
Philippine Agriculturist and Forester—Los Banos
Pittsburg Carnegie Library Bulletin
Photo Topics
Poultry Keeper—Quincy, Ill.
Poultry—Peotone, Ill.
Poultry Success—Springfield
Poultry Tribune—Mt. Morris, Ill.
Practical Dairyman — Rutherford, N. J.
Pratt Institute Free Library Bulletin
Public Service
Ranch and Range—Denver
Reliable Poultry Journal—Quincy, Ill.
Remington Notes—New York
Review of Religions—India
Rosenburg Library Bulletin
Royal Blue—New York
Rural Life—Rochester, N. Y.
Salem Public Library Bulletin
Scranton Public Library Bulletin
Sister Republics
Southwest Trail—Chicago
Southwestern Stockman
Stallion and Jack News—Kansas City
Stock Farm—Lexington, Ky.
Trenton Free Public Library Bulletin
Troy Topics
Trucker and Farmer—New Orleans
Twentieth Century Farmer—Omaha
Union Labor Bulletin—Fort Collins
University of Illinois Experiment Station Bulletin
University of Illinois School of Education Bulletin
Up to Date Farming—Indianapolis
Vegetable Grower
Veterinarian—Detroit
Wallace Farmer—Des Moines
Weekly Market Growers' Journal—Louisville, Ky.
Western Empire—Los Angeles
Western Poultry Journal—Cedar Rapids, Iowa
Western Poultry World—Denver
W. C. T. U. Messenger—Boulder
Wisconsin Agriculturist—Racine
Wool and Cotton Reporter—Boston
World Wide Farming—Denver
Wyoming Farm Bulletin

COLORADO NEWSPAPERS DONATED TO THE LIBRARY

Alamosa Courier
Alamosa Leader
Antonito Ledger
Arvada Enterprise
Aspen Democrat Times
Ault Advertiser
Austin Journal
Berthoud Bulletin
Bismark Weekly Tribune
Boulder County Miner
Breckenridge—Summit County Journal
Brighton Blade
Brighton Register
Bristol Record
Calhan—Divide Farmer
Canon City—Fremont Leader
Carbondale Item
Castle Rock—Record Journal
Chicago Daily Live Stock Record
Colorado Springs—Evening Telegram
Cortez Herald
Craig Empire
Delta County Tribune
Denver—Catholic Register
Denver—Drovers' Telegram
Denver—Highland Chief
Denver—Record Stockman
Dillon—Blue Valley Times
Elbert Co. Tribune
Erie Herald
Evans Courier
Florence Public School News
Fort Collins Courier
Fort Collins Farmer
Fort Collins Morning Express
Fort Collins Review
Fort Lupton Press
Fort Morgan Times
Fruita Independent
Glenwood Post
Grand Junction Daily News
Granada Times
Greeley Tribune and Greeley Republican
Greeley—Weld County Republican
Gunnison News Champion
Gypsum Record
Holyoke—State Herald
Hugo—Range Ledger
Idaho Springs—Clear Creek Miner
Johnstown Breeze
Julesburg News
Kansas City—Drovers' Telegram
Kiowa—Divide Review
Kit Carson Record
La Jara Chronicle
Lamar Sparks
Littleton Independent
Longmont Weekly Times
Loveland Reporter
Manitou Springs Journal
Meeker Herald
Middle Park Times
Milliken Mail
Montrose Press
Ordway Era
Palisade Tribune
Paonia Booster
Penrose Press
Parker Post
Pueblo Chieftain
Pueblo Public Opinion
Pueblo Star Journal
Ridgeway Sun
Rifle Reveille
Rocky Ford Enterprise
Rocky Ford Gazette & Topic
Rocky Ford Tribune
Saguache Crescent
Salida Mail
San Juan County Index
Sterling—Republican Advocate
Sterling Democrat
Silt Searchlight
Trinidad Advertiser
Trinidad Chronicle News
Two Buttes Sentinel
Walden New Era
Weldona—Weldon Valley News
Wellington Sun
Windsor—Poudre Valley
Wray Gazette
Wray Rattler

MATHEMATICS

S. L. MACDONALD........................Professor
MARGARET DURWARD..........Assistant Professor

The work in mathematics is designed not only to meet the practical needs of the engineer, but also to furnish the curriculum with a strong factor for education and culture. The subject is continuously taught through the freshman and sophomore years.

501.—Solid Geometry—This study is intended for students v have passed the accredited high school with credit for Plane Geomet only. The treatment of lines, planes, and angles in space, as a fundamental for Descriptive Geometry, and also the geometry of the sphere, as leading to Spherical Trigonometry, are features of the work. Required in Mechanic Arts division. Prerequisite, entrance requirements. Three hours attendance, freshman year, first semester. Text, Wentworth's "Plane and Solid Geometry." No college credit is given.
Mr. Macdonald

502.—College Algebra—After a brief review of Quadratic Equations, the following topics are taken up and treated in the order given: Binomial Theorem, the Progressions, Complex Numbers, Convergent and Divergent Series, Reversion of Series, Summations of Series, Undetermined Co-efficients, Partial Fractions, and Exponential and Logarithmic Series. Graphical Representation is frequently used. Required in Mechanic Arts and Agricultural divisions, alternative in Home Economics and General Science courses. Five hours attendance, two and one-half credits, first half freshman year, first semester. Text, Hawke's "Higher Algebra." Mr. Macdonald and Miss Durward

503.—Plane Trigonometry—Preference is given to geometric explanation in beginning trigonometry. A thorough drill in the use of logarithms comes incidentally in dealing with the oblique triangle. Prerequisite, entrance requirements. Required in the Agricultural and Mechanic Arts divisions. Five hours attendance, two and one-half credits, second half, first semester, freshman year. Text, Granville's "Trigonometry." Mr. Macdonald and Miss Durward

504, 505.—Spherical Trigonometry and Analytic Geometry—The following topics are treated in the order given: Solution of Spherical Triangles with applications to Astronomy and Geodesy, Co-ordinates, Fundamental Metrical Formulas, Plane Loci and their Equations, the Straight Line, Standard Equations of the Second Degree, Trigonometric and Exponential Functions, Parametric Representation, Conic Sections and General Equation of the Second Degree, Empirical Equations, Loci in Three Dimensions, the Plane and Straight Line, an elementary treatment of the Quadric Surfaces and the most important, Space Curves. Required in Mechanic Arts division. Prerequisites, 502, 503. Five hours attendance, five credits, freshman year, second semester. Texts, Granville's "Spherical Trigonometry." and Riggs' "Analytic Geometry." Miss Durward

506, 507.—Differential and Integral Calculus—The derivative is introduced through the theory of limits and the principal formulas obtained. The geometric interpretation of the derivative and differential is brought in early and followed by applications to plane curves, maxima and minima, and velocities. Next are taken up in the order given: Integration as the inverse of Differentiation, Curvature, the Cycloid and its relatives, the Integral as the Limit of a Sum, Applications of the Calculus to Mechanics, the Law of the Mean, Taylor's Theorem, Partial Differentiation with Applications to the Geometry of Space, Envelopes, Double and Triple Integrals. Required in Mechanic Arts division. Five hours per week throughout the sophomore year, ten credits. Text, Osgood's "Differential and Integral Calculus." Mr. Macdonald

508.—Astronomy—The aim is to make this subject as purely descriptive as possible, to give the student some knowledge of scientific achievement in astronomy and impart something of the spirit of scientific investigation. Elective. Prerequisite, Elementary Trigonometry. Three hours attendance, three credits, senior year, second semester. Text, Moulton's "Introduction to Astronomy." Mr. Macdonald

MECHANICAL ENGINEERING

J. W. LAWRENCE	Professor
ALBERT B. CAMMACK	Assistant Professor
L. D. CRAIN	Assistant Professor
S. I. ROSS	Instructor
H. J. WILSON	Instructor

551.—Carpentry and Joinery—Text books and lectures. Study of the cutting edges of various wood-working tools and the means of keeping them in good order; an explanation of the construction of each tool and its manner of acting on the material; the shrinkage and warping of woods and the different modes of sawing into lumber, and the various forms and uses of framing and other joints. The strength of various timber joints in building construction is considered. Required of students in Mechanic Arts division, first semester, freshman year, one hour attendance, one credit. Text, by Goss. Mr. Wilson

552.—Drawing—This course includes the care and use of instruments and the making of practice drawings. Lettering. Problems in orthographic and isometric projections and the development and intersection of surfaces. Required of students in Mechanic Arts division, first semester, freshman year, eight hours attendance, four credits. Text, by Anthony. Mr. Cammack

553.—Bench Work in Wood—Embraces the manipulation of the tools in their various applications. Students work from drawings. Cases, benches, boxes, foundry flasks, and a variety of other useful articles are made. Required in Agricultural and Mechanic Arts divisions, first or second semester, freshman year, six hours attendance, three credits. Fee, $2.00. Mr. Wilson

554.—Machine Work in Wood—There are given examples of straight turning; cutting in and squaring off; concave, convex, and compound curves; handles for chisels and other tools, and examples in chuck work in separate and combined pieces. Required in the Mechanic Arts division, first semester, freshman year, four hours attendance, two credits. Fee, $1.00. Mr. Crain

555.—Drawing—The sketching of machine parts and the making of working drawings, tracings, and blue prints from these sketches. Required in Mechanic Arts division, second semester, freshman year, four hours attendance, two credits. Prerequisite, 552. Mr. Cammack

556.—Forge Work—Students are carried through a series of carefully graded exercises in both iron and steel, working from drawings in each instance. The students are taught how to bend, twist, upset, draw, and weld iron and steel, how to anneal, case harden, temper, braze, etc. Many pieces are made which are put to a practical use. Required in the Agricultural and Mechanic Arts divisions, first or second semester, freshman year, six hours attendance, three credits. Fee, $3.00. Mr. Ross

557.—Descriptive Geometry—The principles of projection, intersection, development, etc., are discussed and illustrated by a great variety of problems, all of which are accurately worked out on the draughting board by each student. Required in the Mechanic Arts division, second semester, sophomore year. Prerequisite, 555. Five hours attendance, five credits. Text, by Faunce. Mr. Cammack

558.—Boilers—The various forms are carefully studied. Injectors, pumps, condensers, feed-water heaters, and economizers receive special consideration. Chimney draft and mechanical draft are studied and compared with regard to their relative efficiencies. Required in the Mechanical Engineering course, first semester, junior year, three hours attendance, three credits. Text, by Parsons. Mr. Lawrence

559.—Principles of Mechanism—Study of designs for the communication of motion by means of gears, belts, linkage, etc., methods of designing parallel motions, quick return motions, and cone pulleys. The adaptation of the formation of gear teeth of the involute, the epicycloid, the logarithmic spiral and other curves. Elective, junior year, first semester. Prerequisite, Mathematics 503. Three hours attendance, three credits. Text, by Sibley. Mr. Lawrence

560.—Gas and Oil Engines—Theory and construction of gas and oil engines, igniters, governors, etc. The study of traction and portable gas and oil engines, such as are used in industrial plants, upon contracting work and upon highways and farms. The study of automobile engines. Elective, first semester, senior year. Prerequisite, Chemistry 151, Physics 605. Two hours attendance, two credits. Text, by Jones. Mr. Cammack

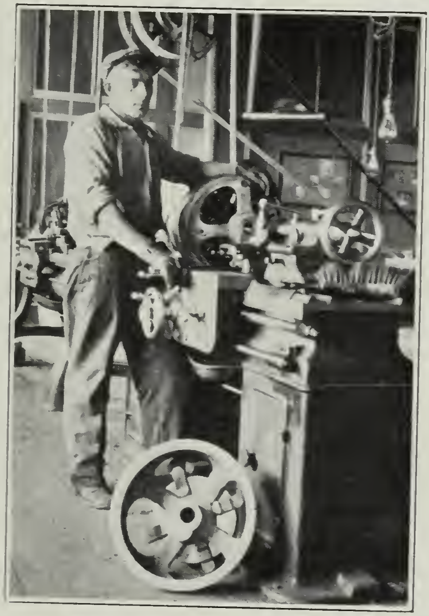
561.—Kinematic Drawing—Required in Mechanical Engineering, two hours attendance, one credit, first semester, junior year. Prerequisites, 555, 503.
Mr. Cammack

562.—Foundry—Students are taught how to charge and manage the cupola, brass furnace, and core oven. Castings of iron, brass, and other metals and alloys are made. Required in Mechanical Engineering course, first semester, junior year. Four hours attendance, two credits. Fee, $2.00.
Mr. Ross

563.—Pattern-Making—Examples of plain work; core work; pulley work; pipe work; gear work; core boxes, their use and construction, are given. Required in the Mechanical Engineering course, first semester, junior year. Two hours attendance, one credit. Fee, $1.00.
Mr. Crain

564.—Machine Shop Tools—Text book and lectures. The aim is to familiarize the student with up-to-date methods under various conditions of practice and with such machines and appliances as do not come under his immediate observation in our shops. Elective, second semester, junior year. Prerequisite, 503. Two hours attendance, two credits. Text, by Vandervoort.
Mr. Cammack

565.—Machine Design—Copying of machinery from good examples; design of riveted joints, elementary machine fastenings, etc. Elective, second semester, junior year. Six hours attendance, three credits.
Mr. Cammack



Making an Electric Motor

566.—Machine Work in Metal—The care and management of tools and their construction is taught. A five horse power vertical steam engine complete in all details, a number of drafting tables, boring bars, gears, vises, bell chucks, and small tools for use in the shop, serve to illustrate the practical use to which shop products are put. Prerequisites, 553, 554, 562, 556. Required in Mechanical Engineering course, second semester, junior year, ten hours attendance, five credits. Fee, $2.00.
Mr. Cammack

567.—The Steam Engine is studied in its various forms in detail. The department has appliances necessary for complete engine tests. Careful attention is given to the study of valves. The study of traction and portable steam engines, such as are used in industrial plants, upon contracting work and upon highways and farms. Various types of steam turbines are taken up and comparisons made with reciprocating engines. Required in Mechanical Engineering course, first semester, senior year. Three hours attendance, three credits. Text, by Ripper.
Mr. Crain

568.—Thermodynamics—A study of the laws of thermodynamics as applied to steam engines, gas engines, air compressors, injectors, and other appliances. Required in Mechanical Engineering course. Prerequisites, 506, 507. Second semester, junior year. Three hours attendance, three credits. Text, by Reeves. Mr. Crain

569.—Transmission of Power—A study of the various forms of power transmission in shops and factories; belt, rope, and chain transmission. Required in Mechanical Engineering course, second semester, junior year. Prerequisite, 503. One hour attendance, one credit.
Mr. Lawrence

570.—Machine Design—The students make designs for screws, bolts, nuts, gears, and complete machines, such as arbor presses, drill presses, lathes, engines, etc. Elective, first semester, senior year, three hours attendance, one and one-half credits. Text, by Reid and Reid.
Mr. Cammack

571.—Specifications and Contracts—Complete working drawings for some particular problem are made, the specifications are made, and a form of contract for such a problem is carefully worked out. Study of the laws governing contracts and specifications. Elective, first semester, senior year, one hour attendance, one credit. Text, by Johnson.
Mr. Lawrence and Mr. Thomas

572.—Seminar—The consideration of articles of interest appearing in the current technical papers and magazines. Required in Mechanical Engineering course, first semester, senior year, one hour attendance, one credit. Mr. Lawrence

573.—Metallurgy—The study of combustion, fuels, furnaces, and refractory materials, especially the metallurgy of iron and steel. Required in the Mechanical Engineering course. Prerequisite, Chemistry 151. Second semester, senior year, one hour attendance, one credit. Text, by Huntington and McMillan. Mr. Crain

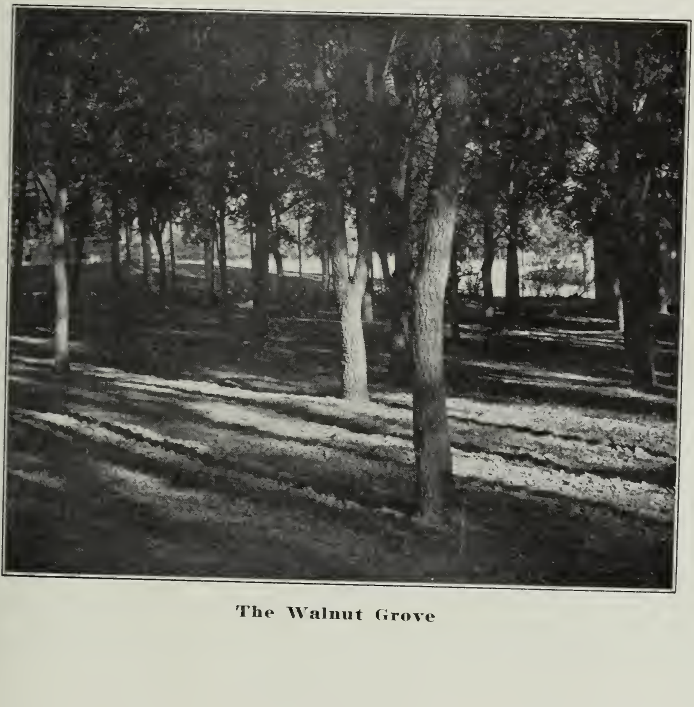
574.—Machine Shop—Required in Mechanical Engineering course, first semester, senior year. Prerequisite, 566. Six hours attendance, three credits. Fee, $1.00.
Mr. Cammack

575.—Machine Shop—Elective, second semester, senior year. Prerequisite, 566. Four hours attendance, two credits. Fee, $1.00.
Mr. Cammack

576.—Engineering Design—The design and arrangement of power plants, shops, and factories. Required in Mechanical Engineering course. Prerequisite, 570. Second semester, senior year, one hour attendance, one credit.
Mr. Cammack

577.—Railway Mechanical Engineering—The design and construction of locomotives, the operation of the airbrake, and the study of different forms of signals and switches. Elective, second semester, senior year, one hour attendance, one credit. Lectures.
Mr. Lawrence

578.—Heating and Ventilation—The study and design of various



The Walnut Grove

forms of heating and ventilation in common use in modern buildings. Required in Mechanical Engineering course. Prerequisite, Chemistry, 151, and Physics 607. Two hours attendance, two credits, second semester, senior year. Text, by J. D. Hoffman. Mr. Lawrence

579.—Steam Engine Design—It is the endeavor to have this work conform to the best modern practice, and to supplement the instruction given, by requiring the student to investigate existing engines with regard to their design and construction. Blue prints of drawings furnished by prominent manufacturers are also used, and show the prevailing forms of engines in use. Elective, second semester, senior year. Prerequisites, 570, 567. Three hours attendance, three credits. Mr. Crain

580.—Compressed Air Machinery—The study of motors, compressors, hoists, and various air tools. Elective, second semester, senior year. Prerequisite, 567. Two hours attendance, two credits. Text, by Richards. Mr. Lawrence

581.—Seminar—Continuation of 572. Second semester, senior year, one hour attendance, one credit. Mr. Lawrence

582.—Thesis—Each senior is assigned a subject, which he is to investigate and upon which he must write a satisfactory thesis. Second semester, senior year, four hours attendance, two credits. Mr. Lawrence

583.—Refrigeration and Refrigerating Machinery—The study of methods of producing low temperatures by artificial means, and the study of refrigerating machinery. Elective, second semester, senior year. Prerequisites, 567, 574 and 575, Physics 611. One hour attendance, one credit. Lectures. Text, by Redwood. Mr. Lawrence

584.—Hydraulic Machinery—The study of machinery actuated by water power, and the handling of water by means of pumps, rams, etc. Elective, second semester. Prerequisites, Physics 611, Hydraulics 212. One hour attendance, one credit. Lectures. Text, by Bjorling. Mr. Lawrence

585.—Mechanical Engineering Laboratory—Investigations of the physical properties of materials of construction entering into buildings, machinery, and other structures; tests and examinations of different kinds of boilers, engines, pumps, etc. Required in Mechanical Engineering course, second semester, senior year. Prerequisites, 567, 574, 575. Six hours attendance, three credits. Mr. Crain

Visits of Inspection—During the senior year the students make visits of inspection to large industrial establishments of the state, in charge of an instructor. These visits are intended to be of educational value and to supplement the work done at the college and to show the students the pracical application of many things taught in the classroom. Required in Mechanical Engineering course, second semester, senior year.

MILITARY DEPARTMENT

GEO. L. SCOTT, Major, U. S. A.................Professor

By Act of Congress all Agricultural Colleges are required to teach Military Science and Tactics. Under faculty regulation all male students, except seniors, are required to drill.

The importance of military training, both to the individual and the state, is so important that comment thereon is here unnecessary, further than to say that the physical training and development alone are sufficient proof of its benefits. The growing demand for military instruction in connection with school work, and the fact that the State Agricultural College is the only state institution where such a department exists, has led the authorities to make the work as thorough as possible.

For the purpose of instruction, an infantry battalion of four companies, with staff, band and signal corps, has been organized and maintained. Each company has a captain, two lieutenants, five sergeants, and six corporals. The commissioned officers are selected from those in the junior class, and non-commissioned officers from other classes, showing proficiency in the work.

In addition to the above, military instruction covering the same subjects is required and given to the battalion of the School of Agriculture, and to one company at Fort Lewis, Colorado.

The work in the first semester embraces the school of the soldier, company, and battalion in close order. Battalion drills are continued at intervals throughout the year. Extended order drill is taken up in the first semester and continued during the second semester. This includes skirmishes and battle exercises in platoon, company, and battalion; advanced guard, rear guard, and out-post duties. Inspections, battalion parades, guard mounting, and street parades are occasionally given. Inspections are given frequently to insure the proper care of equipment. All military exercises are performed in accordance with the United States drill regulations of 1911.

Battalion Officers

The signal corps does practical work in transmitting messages, both by means of signal flag and with heliographs. The systems used are the same as those used in the government service.

Students who are physically unable to take the regular work may be assigned to the signal corps. During unfavorable weather theoretical instruction is given.

The department is equipped with 500 cadet rifles, belts, cartridge boxes, bayonets, and scabbards. National and Battalion colors; swords for officers; signal flags, and heliographs.

All new men registering will be required to purchase a military uniform through the Secretary of the College. This matter should be arranged for as soon as registration is completed, and must not be later than one week after registration. Usually, the uniform costs seventeen dollars.

Absence from drill is excused for illness or absence from the city only. Two unexcused absences cause suspension from all college classes for one day, the second similar offense causes suspension from all classes for two days, the third similar offense causes permanent suspension from the college. Excused absences not made up by the close of the week following the day the student was absent are treated as unexcused.

BATTALION ROSTER

George L. Scott, Major, U. S. A.	Commandant
C. O. Nuckolls, Cadet Captain	Assistant Instructor and Armorer

Field and Staff

R. McCann	Cadet Major
H. C. Nevius	Adjutant
A. Lunn	Sergeant Major

Band Officers

W. E. Runge, Musical Director

H. O. Strange	Chief Musician	V. Tucker	Corporal
T. H. McCarty	Drum Major	C. Alford	Corporal
E. McKune	Sergeant	A. Hock	Corporal
A. Swanson	Sergeant	H. Fauber	Corporal
H. Woods	Sergeant	C. M. Wellar	Corporal
F. Wilson	Sergeant	F. Chisholm	Corporal
S. Smith	Sergeant	F. Stiers	Corporal

Military Band and Cadet Battalion

Company "A"

G. Strock, Captain

C. P. Hopkins	First Lieutenant
F. Veverka	Second Lieutenant
G. Kinghorn	First Sergeant
W. Calhoun	Sergeant
G. Law	Sergeant
H. Kobey	Sergeant
A. Falk	Sergeant
N. L. Foster	Corporal
R. C. Smith	Corporal
M. L. Gorton	Corporal
D. H. Strong	Corporal
S. Bull	Corporal

Company "B"

H. A. Burton, Captain

L. C. Osborn	First Lieutenant
A. T. Johnson	Second Lieutenant
R. E. Cottrell	First Sergeant
C. H. Kinney	Sergeant
R. Burckhalter	Sergeant
L. I. Weigand	Sergeant
A. A. Goodman	Sergeant
R. McArthur	Corporal
R. Cannon	Corporal
F. Morris	Corporal
H. S. Wright	Corporal
J. E. Morrison	Corporal
H. Sandhouse	Corporal

Company "C"

F. Limbocker, Captain

W. E. Hugins	First Lieutenant
W. Bevan	Second Lieutenant
T. R. Smith	First Sergeant
C. Shipman	Sergeant
S. L. Conrey	Sergeant
R. E. Fisher	Sergeant
G. Mercer	Color Sergeant
R. McLaughlin	Corporal
N. B. Joy	Corporal
F. E. Ball	Corporal
R. L. Ginter	Corporal
C. M. Chase	Corporal

Company "D"

R. G. Coffin, Captain

F. Atkinson	First Lieutenant
G. M. Strecker	Second Lieutenant
T. E. Leiper	First Sergeant
R. L. Giddings	Sergeant
E. Murray	Sergeant
F. Law	Sergeant
R. Alstead	Sergeant
I. Dormer	Corporal
C. Stebbins	Corporal
W. Baker	Corporal
E. J. Hendrickson	Corporal
E. Rundahl	Corporal
G. Paxton	Corporal

PHYSICAL TRAINING

H. W. HUGHES	Director
MRS. AGNES UPSON	Assistant Director

(In charge of Physical Training for Women)

Physical Education for Women.—Physical training is required of every young woman taking college work, except the students of the Musical department, and seniors. The work is given in three one-hour periods each week (one credit) under the leadership of a woman who is a trained specialist in the physical development of women. Gymnasium suits of dark blue flannel, with blouse and full bloomer, and gymnasium shoes, are required. Students are required to wear uniform gymnasium suits, which should, under no consideration, be ordered before consulting the director.

The department is conducted upon scientific principles. Its aim is both hygienic and educative. It attempts to aid the normal functioning of the organs of the body, to improve muscular development, to correct abnormalities, and to supply recreation. It aims especially to assist the student toward perfect nervous control and by exercise of precision and skill to train nerve centers and muscles to act quickly and accurately in response to the will. Swedish gymnastics, wands, dumbbells, and Indian clubs are used in the daily program. Particular attention is given to those exercises which will enable the student to acquire erect carriage, and establish accurate movements that the ordinary duties of every day life may be accomplished with a minimum expenditure of energy. To assist in this direction rhythmatical balance movements, military, and figure marching find a place.

The spirit of play is fostered. The students enjoy basketball, volleyball, and tennis, in season. Reasonable effort is made to encourage out-of-door sports, and the director devotes considerable time, when the season is suitable, to out-of-door exercises.

Lectures are given on hygiene, emergencies, physiology of exercise, history and literature of physical education, and allied subjects.

On beginning practical work, a physical examination is given for the purpose of ascertaining the individual needs of each student. No effort is spared to insure that benefit shall always result from the exercises. Students physically unfit at any time for any part of the work are excused from the same during the period of disability. Those thus excused observe the work of the class and are held responsible for acquaintance with the work.

The Department of Athletics is well organized under immediate direction of the Physical Director and comprises work in four lines, football, basketball, track, and baseball, each of which has its separate organization and finance. Each is managed by a student elected by the student body. All business matters pertaining to athletics are con-

Class in Physical Training

sidered by the council, consisting of S. L. MacDonald, chairman; H. W. Hughes, Albert B. Cammack, Floyd Cross, '14, John Grant, '14; three of whom are members of the faculty, and two are students elected by the Athletic Association.

The Agricultural College is a member of the Colorado Athletic Conference. Its athletics are on a very firm basis, free from debt, with all athletic teams well supplied with necessary equipment.

Colorado Field, the new athletic field for men, is located south of Agricultural Hall; the field for women is north.

The field for men consists of a quarter-mile cinder track, with football and baseball fields sodded in blue grass on the inside of the oval, with steel bleachers to seat 1,000 persons. The outside of the oval contains two practice fields, one for football, and one for baseball. In one corner of the field is located a cement club house, with hot and cold showers, warm rubbing tables, and lockers to accommodate 150 men.

The entire field is parked with shrubbery and driveways, and is surrounded by a high wire fence, with shrubbery planted directly on the inside.

The field for women is located north of Agricultural Hall, and when completed will contain tennis, basketball, and volleyball courts; a field sodded for hockey and other out-of-door games. Provision is made for outdoor theatricals. It is planned in such a manner that a part may be flooded and used for skating during the winter months.

Athletic Club House

PHYSICS AND ELECTRICAL ENGINEERING

FRED G. PERSON	Professor
F. J RANKIN	Associate Professor
FRANK P. GOEDER	Instructor

601.—Household Physics—A course covering mechanics of solids, liquids, gases, heat, magnetism and electricity, sound, and light. The fundamentals of the subject are carefully considered in their relation to the household. Ventilation, heating and lighting, etc., are given careful attention. Required in General Science and Home Economics courses, first semester, freshman year, two hours attendance, two credits. Prerequisite, Algebra, through quadratics. Text, Aldous' "Elements of Physics." Mr. Person

602.—Household Physics Laboratory—Taken with 601 and designed to give the student more intimate acquaintance with the phenomena of daily life by performing the experiments covered by the subject matter of the text. Required in General Science and Home Economics courses, first semester, freshman year, two hours attendance, one credit. Fee, $1.00. Mr. Person

603.—Household Physics—Continuation of 601. Second semester, freshman year, two hours attendance, two credits. Mr. Person

604.—Household Physics Laboratory—Continuation of 602. Second semester, freshman year, two hours attendance, one credit. Fee, $1.00. Mr. Person

605.—General Physics—A course covering mechanics of solids, liquids, gases, heat, magnetism, electricity, sound, and light. A course intended to give general knowledge of the phenomena in the physical world, and to form a basis for the study of all applied sciences. Required in the divisions of Agriculture and Mechanic Arts, first semester, sophomore year, three hours attendance, three credits. Text, by Reed and Guthe. Mr. Person

606.—General Physics Laboratory—Taken with 605. Experimental work designed to give the student first hand knowledge, and to teach him the methods of measurement and ability to handle and manipulate apparatus. Required in the divisions of Agriculture and Mechanic Arts, first semester, sophomore year, four hours attendance, two credits. Fee, $2.00. Mr. Person

607.—General Physics—Continuation of 605. Sophomore year, second semester, three hours attendance, three credits. Mr. Person

608.—General Physical Laboratory—Continuation of 606. Sophomore year, second semester, four hours attendance, two credits. Fee, $2.00. Mr. Person

609.—Alternating and Direct Current Machinery—A general course of lectures and recitations. Study of elements of electricity; construction and operation of alternating and direct current dynamos and motors. For non-electrical engineering students. Required of civil and mechanical engineering students, first semester, senior year, three hours attendance, three credits. Text, "Dynamos and Motors," Franklin and Esty. Mr. Person

610.—Laboratory Course for 609—Required of mechanical engineering students, first semester, senior year, four hours attendance, two credits. Text, Franklin & Esty's "Laboratory Manual." Fee, $2.00. Mr. Rankin

611.—Electrical Measurements—A study of the units of measurements involved in electrostatic and electromagnetic phenomena. Required in Electrical Engineering course, first semester, junior year, three hours attendance, three credits. Text, Franklin & McNutt. Mr. Person

612.—Electrical Measurements Laboratory—Taken with 611. Required in Electrical Engineering course, first semester, junior year, four hours attendance, two credits. Fee, $1.00. Mr. Rankin

613.—Direct Current Machinery—The construction and operation of direct current apparatus and machinery. Required in junior year, first semester, two hours attendance, two credits. Text, "Elements of Electrical Engineering," Vol. I, by Franklin & Esty. Mr. Rankin

613A.—Direct Current Machinery—Continuation of 613. Second semester, three hours attendance, three credits. Mr. Rankin

614.—Direct Current Machinery Laboratory—Taken with 613A. Required in Electrical Engineering course, second semester, junior year, ten hours attendance, five credits. Text, "Testing Electro Magnetic Machinery," Swenson & Frankenfield. Fee, $3.00. Mr. Rankin

615.—Electric Lighting and Photometry—A course in distributing systems and lamps. Measurement of candle power. Elective, three hours attendance, three credits, second semester, junior year. Text, "Electric Lighting," by Francis B. Crocker, Vol. II. Mr. Rankin

616.—Telephone, Telegraph, Railway Signals, Fire Alarms—Lectures and recitations. A study of the theory and practice of telephone and telegraph work. Elective, senior year, first semester, two hours

Physics and Electrical Engineering Building attendance, two credits. Text, "American Telephone Practice," by Kempster B. Miller.

617.—Laboratory for 616—Elective, senior year, first semester, four hours attendance, two credits. Mr. Rankin

618.—Alternating Current Machinery—Required in Electrical Engineering course, first semester, senior year, five hours attendance, five credits. Text, "Elements of Electrical Engineering," Vol. II, by Franklin & Esty. Mr. Rankin

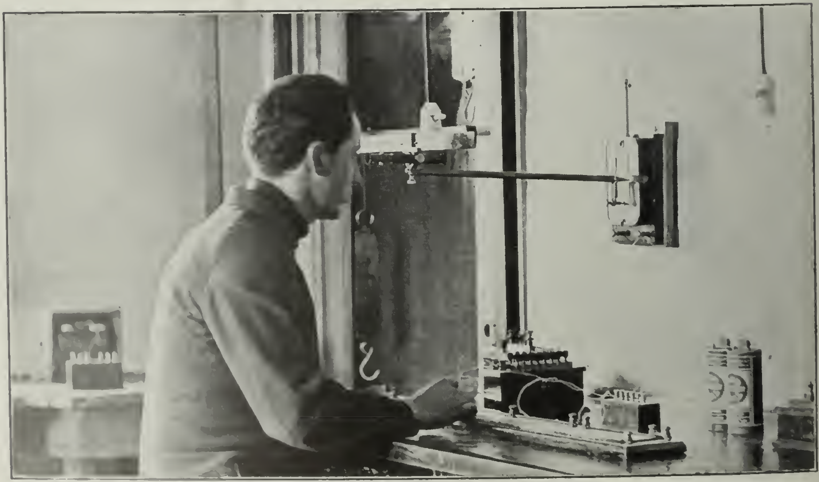
619.—Laboratory for 618—Required in the Electrical Engineering course, senior year, first semester, ten hours attendance, five credits. Fee, $3.00. Mr. Rankin

620.—Continuation of 618—Required in Electrical Engineering course, second semester, senior year, two hours attendance, two credits. Mr. Rankin

621.—Continuation of 619—Required in Electrical Engineering course, second semester, senior year, ten hours attendance, five credits. Fee, $3.00. Mr. Rankin

622.—Street Railways—Lectures, recitations, and practical tests on street railway system. Both alternating and direct current railways are studied. Prerequisite, 613. Elective, senior year, first semester, three hours attendance, three credits. Text, "American Street Railway," by Herrick & Boynton. Mr. Rankin

623.—Design of Electrical Machinery and Apparatus—Lectures,



Measuring the Resistance of a Conductor

recitations and drawing. A course in the design of lifting magnets, direct current dynamos and motors, transformers, alternating current generators, and induction motors. Prerequisite, 613. Elective, first semester, senior year, six hours attendance, three credits.

Mr. Rankin

624.—A continuation of 623—Elective, senior year, second semester, four hours attendance, two credits. Mr. Rankin

625.—Seminar—Discussion of current engineering topics as treated in the engineering magazines. Elective, first semester, senior year, one hour attendance, one credit. Mr. Rankin

626.—Seminar—A continuation of 625. Required, second semester, senior year, one hour attendance, one credit. Mr. Rankin

627.—Hydro-Electric Machinery—Elective, second semester, senior year, two hours attendance, two credits. Mr. Rankin

628.—Commercial Electrical Engineering—A course devoted to costs of materials, construction, and in general, the commercial side of electrical engineering. Elective, senior year, second semester, one hour attendance, one credit.

629-630.—Thesis—An original investigation of some electrical engineering subject. Elective, three credits, each semester.

Mr. Rankin

631.—Applied Mechanics—This course, consisting of lectures and recitation, will cover the practical applications as well as the theoretical side of forces in action in the general field of mechanics. Numerous problems illustrating the different cases will be used. Prerequisites, college algebra, trigonometry, calculus. Required, sophomore year, second semester, three hours attendance, three credits.

Mr. Person

632.—Electrical Power Transmission—Prerequisite, course 618. Required, senior year, second semester, two hours attendance, two credits. Mr. Rankin

RURAL AND INDUSTRIAL EDUCATION

CHAS. A. LORY	Acting Professor
C. G. SARGENT	Rural School Visitor

The Department of Rural and Industrial Education as at present organized is conducting extension work only. The Department was organized by order of the Executive Committee of the State Board of Agriculture in the summer of 1912, and Mr. Sargent began his work in October. Previous to the organization of the department, a great deal of work in co-operation with the rural schools was carried on under the direction of the Committee on Rural and Industrial Education.

Rural School Visitor.—The Rural School Visitor is making a survey of the rural and industrial education facilities of the state. He is co-operating with the county superintendents in the introduction of agriculture, mechanic and household arts into some of the stronger rural schools, and in improving the conditions of the rural schools generally. Where conditions are favorable, he is co-operating with county superintendents in the work of organizing consolidated districts.

Special Instruction and Assistance.—Special instruction is offered in the summer normal institutes in agriculture and in household arts, and direct assistance through correspondence and personal visitation is given to schools that are enlarging their curriculum to include more vocational training.

Plans and Lessons Outlines.—Plans and blue prints of buildings and equipment are furnished on application, and assistance is given in the preparation of courses of study. Outlines of a series of lessons in household arts and in agriculture have been prepared and furnished to the rural teachers of the state. A package library relating to the

School Buildings of Six Rural Districts

Cache la Poudre Consolidated School Has Taken Their Place

teaching vocational subjects especially agriculture, household arts, and mechanic arts, and to the great problem of rural school improvement has been prepared by the library and is lent to teachers and to school officers upon application.

Correspondence.—Correspondence with any one interested in the betterment of our rural schools, and in courses in agriculture, household arts, and mechanic arts in our high schools, is solicited.

VETERINARY MEDICINE

GEORGE H. Glover	Head of Division, Professor of Theory and Practice
I. E. NEWSOM	Professor of Pathology
HARRY E. KINGMAN	Professor of Surgery
C. L. BARNES	Professor of Materia Medica
A. W. WHITEHOUSE	Professor of Anatomy

650.—Anatomy—This subject is given in two hour periods in the laboratory. Complete dissection of the dog is begun. Ten hours attendance, five credits, first semester, freshman year. Texts, "Sisson's Veterinary Anatomy," and Bradley's "Dissection of the Dog." Fee, $2.50. Mr. Whitehouse

651.—Anatomy—Dissection of the dog is finished and complete dissection of the horse is begun. Ten hours attendance, five credits, second semester, freshman year. Text, McFaydean's "Anatomy of the Horse." Fee, $2.50. Mr. Whitehouse

652.—Anatomy—Dissection of the horse is continued. Ten hours attendance, five credits, first semester, sophomore year. Fee, $2.50.
Mr. Whitehouse

653.—Anatomy—Dissection of the horse is finished. Comparative dissection of sheep, ox, pig, and possibly fowl. Ten hours attendance, five credits, second semester, sophomore year. Fee, $2.50.
Mr. Whitehouse

655.—Histology—A study of the minute structure of normal animal tissues. Four hours attendance, four credits, first semester, freshman year. Text, Bailey's "Textbook of Histology."
Mr. Newsom

656.—Histology Laboratory—Preparing, staining, mounting, and microscopic examination of normal animal tissues. Six hours attendance, three credits, first semester, freshman year. Fee, $2.50.
Mr. Newsom

660.—Physiology—A study of the functions of normal tissues and organs of the animal body; general, special, and comparative physiology. Five hours attendance, five credits, second semester, freshman year. Text, Fred Smith's "Manual of Veterinary Physiology." Prerequisites, 650, 651.
Mr. Whitehouse

661.—Physiology—Continuation of 660. Two hours attendance, two credits, first semester, sophomore year. Text, same as for 660.
Mr. Whitehouse

662.—Physiology—Continuation of 661. Two hours attendance, two credits, second semester, sophomore year.
Mr. Whitehouse

663.—Materia Medica—This subject treats of the derivation, physical and chemical properties, physiological actions, preparations

Meat Inspection in Local Market

and doses of drugs. Five hours attendance, five credits, second semester, freshman year. Mr. Barnes

664.—Materia Medica—Continuation of 663. Three hours attendance, three credits, first semester, sophomore year. Mr. Barnes

665.—Pharmacy—Laboratory instruction in the preparation of fluid extracts, tinctures, pills, official ointments and liniments. Five hours attendance, two and one-half credits, second semester, sophomore year. Fee, $2.50. Mr. Barnes

668.—Therapeutics—A consideration of the use of remedial agents in the treatment of disease. Two hours attendance, two credits, first semester, senior year. Prerequisite, 664. Mr. Kingman

669.—Therapeutics—Continuation of 668. Two hours attendance, two credits, second semester, senior year. Mr. Kingman

670.—Parasitology—A study of the animal parasites affecting the domesticated animals with means of control and eradication. Three hours attendance, three credits, second semester, junior year. Text, Kaupp's "Animal Parasites and Parasitic Diseases." Mr. Newsom

671.—Parasitology Laboratory—A macroscopical and microscopical study of animal parasites. Two hours attendance, one credit, second semester, junior year. Fee, $1.00. Mr. Newsom

672.—Pathology—A discussion of disease processes in general, edema, inflammation, degeneration, regeneration, new growths, etc. Three hours attendance, three credits, first semester, junior year. Text, Kinsley's "Veterinary Pathology." Mr. Newsom

673.—Pathology Laboratory—A study of the gross and microscopic appearance of diseased tissues. The research work of the experiment station is of special value to the student. Six hours attendance, three credits, first semester, junior year. Fee, $2.50. Mr. Newsom

674.—Bacteriology—A study of bacteria and protozoa pathogenic for animals. Three hours attendance, three credits, second semester, sophomore year. Text, Buchanan's "Veterinary Bacteriology." Mr. Newsom

675.—Bacteriology Laboratory—The cultural and microscopic study of the organisms mentioned in the text. Ten hours attendance, two and one-half credits, one-half second semester, sophomore year. Text, Heineman's "Laboratory Guide." Fee, $3.00. Mr. Newsom

676.—Meat Inspection—A study of the gross lesions of disease in food producing animals; local and federal laws governing inspection and general principles which should guide the meat inspector. Three hours attendance, three credits, first semester, senior year. Text, Edelman's "Meat Hygiene." Mr. Newsom

677.—Autopsy—Required of all senior and junior students whenever material is available. No credit. Mr. Newsom

678.—Laboratory Diagnosis—Diagnosis of disease by examination of body fluids, microscopic examination of tissue and experimental inoculations. Special stress is given to analysis of urine, blood examinations, and detection of poisons. Ten hours attendance, five credits, second semester, senior year. Texts, Fish's "Urine of the Horse and Man," Burnett's "Pathology of the Blood of Domesticated Animals," and Holland's "Medical Chemistry." Fee, $2.50. Mr. Newsom

681.—Surgical Restraint—Practical instruction in the restraint of animals during examination or operation. It includes the study of numerous makes and styles of casting harnesses, the demonstration of their uses and advantages; the tying of knots; making of halters and numerous other appliances used in handling the domestic animals. Two hours attendance, one credit, second semester, freshman year.
Mr. Kingman

682.—Surgery—General surgery; consideration of the causes, course, symptoms, and treatment of surgical diseases of the domestic animals. Two hours attendance, two credits, first semester, junior year. Text, Frohner's "General Veterinary Surgery."
Mr. Kingman

683.—Surgery—Continuation of 682. Two hours attendance, two credits, second semester, junior year. Mr. Kingman

684.—Lameness—The causes of lameness, art of diagnosis, and treatment. Three hours attendance, three credits, second semester, junior year. Prerequisites, 650, 651, 652, 653. Text, Wyman's "Diagnosis of Lameness in the Horse." Mr. Kingman

685.—Operative Surgery—Consideration of operative technique for specific operations. Taught by lectures and demonstrations. Two hours attendance, two credits, first semester, senior year. Prerequisites, 682 and 683. Mr. Kingman

686.—Obstetrics—The diseases incident to reproduction, their causes, prevention, and treatment, supplemented by demonstrations in the clinic. Prerequisites, 650, 651, 652, 653, 672. Four hours attendance, four credits, first semester, senior year. Text, Williams' "Obstetrics." Mr. Kingman

687.—Surgical Exercises—Practice in surgical technique. Taken any time during the senior year when material is available. One credit. Fee, $2.00. Mr. Kingman

688.—Shoeing and Soundness—The principles involved in the correct shoeing of horses. Also a thorough understanding of the details of examining horses for soundness or for fitness for special service. Conformation in relation to disease. Two hours attendance, two credits, second semester, senior year. Mr. Barnes

690.—Clinic—Practice in the physical examination of animals, nursing, bandaging, the application and administration of medicinal agents. One hour attendance, one credit, second semester, freshman year. Mr. Kingman

691.—Clinic—Sophomore clinic consists of lectures upon animals under treatment. Two hours attendance, one credit, second semester, sophomore year. Mr. Kingman

693.—Clinic—Junior students are expected to assist the seniors in their hospital and clinical work, which consists, among other things, in making daily examinations of cases, and assisting the dressing of wounds, and treatment of all cases in the hospital. Five hours attendance, two and one-half credits, first semester, junior year. Mr. Kingman

694.—Clinic—Continuation of 693. Five hours attendance, two and one-half credits, second semester, junior year. Mr. Kingman

695.—Clinic—Seniors are given preference in the ambulatory clinic and assisting with operations, diagnosis, and treatment of all cases in the hospital. Five hours attendance, two and one-half credits, first semester, senior year. Mr. Kingman

696.—Clinic—Continuation of 695. Five hours attendance, two and one-half credits, second semester, senior year. Mr. Kingman

697.—Theory and Practice—Diseases of a sporadic nature are first considered, including diseases incident to the respiratory, digestive, circulatory systems, etc. Living animals are utilized as far as possible in practical demonstration of various diseases, as are also specimens from the pathology museum. Four hours attendance, four credits, first semester, junior year. Text, Hutyra & Marek's "Pathology and Therapeutics of the Diseases of Domestic Animals." Mr. Glover

698.—Theory and Practice—Continuation of 697. Five hours attendance, five credits, second semester, junior year. Text, same as 697. Mr. Glover

699.—Theory and Practice—Deals principally with infectious diseases, acute infectious exanthematic diseases, acute infectious diseases with localization of certain organs, infectious diseases with special involvment of the nervous system; chronic infectious diseases. Five hours attendance, five credits, first semester, senior year. Text, same as 697. Mr. Glover

Part of the College Herd

700.—Theory and Practice—Continuation of 699, and infectious diseases produced by protozoa. Four hours attendance, four credits, second semester, senior year. Text, same as 697. Mr. Glover

702.—Dairy Inspection—This subject embraces the sanitary handling of milk, use of the score card, diseases of dairy cows, adulteration of milk, effect of improper food on the dairy cow and her products, the tuberculin test, etc. Two hours attendance, two credits, second semester, senior year. Prerequisites, 700 and 675. Mr. Glover

703.—Diseases of Livestock—This subject is devoted to a practical consideration of common accidents and ailments on the farm; the care of animals in health and nursing in disease. Elective in the Agricultural division, three hours attendance, three credits, first semester, junior year. Mr. Barnes

704.—Veterinary Elements—The care and management of live stock on the farm; the recognition of diseases and caring for sick animals. Two hours attendance, two credits, first semester, senior year. Required in Animal Husbandry course. Text, Reynold's "Veterinary Studies for Agricultural Students." Mr. Barnes

705.—Agricultural Bacteriology—A study of morphology, physiology and other phenomena exhibited by those bacteria that have special interest for students in Agriculture. Special stress is laid on bacteria of the soil, milk, and those causing plant and animal diseases. Required of seniors in Animal Husbandry, Entomology, and Agronomy. Two hours attendance, two credits, second semester. Text, Marshall's "Microbiology for Agricultural and Domestic Science Students."
Mr. Newsom

706.—Bacteriology Laboratory—Preparation of culture media, acquisition of bacteriological technique and the cultivation and observation of the micro-organisms relating to soil, milk, plant, and animal diseases. Ten hours attendance, two and one-half credits, one-half semester. Required of seniors in Animal Husbandry. Text, Heineman's "Laboratory Guide." Fee, $3.00. Mr. Newsom

707.—Household Bacteriology—A study of those micro-organisms that are of special interest to students of home economics. Special stress is laid on molds, and yeasts, the manufacture and preservation of foods, the milk and water supply, and the more common bacterial diseases of man. Two hours attendance, two credits, second semester. Required of seniors in Domestic Science. Text, Buchanan's "Household Bacteriology." Mr. Newsom

708.—Bacteriology Laboratory—The preparation of culture media and the culture and observation of micro-organisms that are of special interest to students of home economics. Ten hours attendance, two and one-half credits, one-half second semester. Required of seniors in Domestic Science. Text, Heineman's "Laboratory Guide." Fee, $3.00.
Mr. Newsom

CONSERVATORY OF MUSIC

ALEXANDER EMSLIE. Director Conservatory of Music
Voice Culture, Opera, Oratorio, and Chorus Director
MRS. ALEXANDER EMSLIE........................
Directress Piano Department, and Instructor in Piano
HOWARD S. REYNOLDS...Director Violin Department, and Instructor in Violin, Harmony, Counterpoint, and Composition
MISS LULU GRIFFITHS...........Assistant in Piano
MISS CARRIE HAMILTON..........................
Assistant Teacher of Vocal and Public School Music
MISS BERTHA CLARK..................Accompanist
BENNET W. FOLTZ.............Instructor in Cornet
W. E. RUNGE.......................................
Instructor in Clarinet, and Leader of Military Band

The Conservatory of Music furnishes carefully prepared courses of study in each of the various branches taught, commencing with the most elementary in each specific branch and carrying its students through to the last stages of a finished musical education. Musical education in the West has steadily advanced so that it is now conceded that the advantages are greater at home than in the East.

Voice Culture.—In this department careful attention is given to the following: Correct tone placement, breathing, diction, phrasing, interpretation, style, etc. In the main, oral exercises are used, as it has been demonstrated over and over again that this method of teaching has produced the best results.

Oratorios and Cantatas.—The study of oratorios should be undertaken only by the most advanced pupils. The highest ambition of a singer should be to achieve distinction in this line of work. The following oratorios and cantatas may be studied: Handel's Messiah, Samson, Judas Maccabeus, and Jeptha; Mendelssohn's Elijah, St. Paul, Athalie, and Hymn of Praise; Haydn's Creation, Seasons, etc. A competent accompanist will be furnished at lessons in oratorio, free of charge.

School of Oratorio and Acting.—Opera, like oratorios, should be studied by advanced pupils. No singer can be fully equipped without

Conservatory of Music

being able to sing at least three operas. It brings to the voice a quality of tone which cannot be obtained from any other study of music. Pupils desirous of studying the art of acting in connection with the opera can do so, although it is not compulsory. The study of acting is offered so far as it relates to operatic rendition in order to give the pupils a graceful bearing on the stage or platform. As is well known, a singer's success is largely due to his or her personal appearance in opera, oratorio, or concert singing.

Voice Training for Children.—This training is given in classes and is invaluable to children. Much of the purity, beauty, and ease of tone in speech and song of the adult depends upon the care and guidance of the voice in childhood. Proper vocal exercises are given to develop a perfectly healthy throat—stress is laid upon the extreme delicacy of the vocal organs and the great danger of straining them by too loud singing, talking or laughing. There would be fewer harsh, metallic, nasal, guttural voices if parents could but realize the importance of such care.

Pianoforte.—It is a universally conceded fact that the study of pianoforte is and will continue to be a very essential part of a musical education. Considering the great advance made in this line of work during the last decade, a course of training which answered the needs of pupils a few years ago is entirely inadequate to present demands. While the outlined course is not obligatory, it will be used to meet the individual requirement. Special attention is given to musical touch, interpretation, ear training, musical analysis, rhythm, sight reading, and musical thinking. The famous Leschetizky, also the Mason touch and technique are employed in fundamental work.

Children's Work.—This work is given both privately and in class. The private work consists of the study of melody, rhythm, technique, and sight reading. Formed into classes, the pupils are taught by means of symbols. Interesting games make tedious drills subjects of pleasure; stories and songs stimulate ideas and musical intelligence. Mental drills are used to awaken musical thought; the eye is trained to read quickly and correctly musical notation. The muscles of the fingers, wrist, and arm are developed and strengthened by finger gymnastics and table technique, performed to the rhythm of delightful little songs. The sense of rhythm is developed by rhythmic exercises and songs. Marches and drills cultivate correct ideas of time. Pictures and verses teach of the great composers. Piano work illustrates the principles taught by games and exercises.

Demonstrations will be given occasionally to show parents and friends the results accomplished in this line of work.

Harmony, Counterpoint, and Musical History.—The study of Harmony proper begins with the consideration of the Triad. Following this comes the rules for connecting Triads; the inversion of Triads; consecutive unisons, fifths and octaves; chords of the seventh and their inversions; cadences; Italian, German, French, and Neapolitan sixth chords; chords of the ninth, eleventh and thirteenth; modulations; suspensions and retardations; open harmony, and score writing. Following this Elementary Harmony comes a course of Counterpoint. This study must be directed in accordance with the needs of each individual pupil.

The course in the history of music consists of text book and lectures on the development of music from early times to the present. This course is invaluable for a greater knowledge of either vocal or piano music.

Public School Music.—This course is designed for the training of supervisors of music in public schools. There is an incessant demand from all parts of the country for capable teachers especially qualified to supervise and teach music in the public schools. Such knowledge can only be obtained under the guidance of a teacher who has by personal experience familiarized himself with the peculiar demands of this line of work. The conservatory offers a thorough course in this line of study. Instruction is given both privately and in class. Those wishing to take the full course in one year are required to take four class lessons a week.

Sight Singing and Reading.—The work of this course consists in presenting the melodic and rhythmic elements of music with special reference to notation and its relation to music thinking and music reading. It seeks systematically to develop the ability to translate quickly the written symbols of music into melody and song, and aims especially to prepare for acceptable chorus choir work, as well as to lay foundation work for all music thinking.

Students' Recitals.—Recitals are given at intervals during the season. These recitals are a part of the regular work of the conservatory and are designed to give frequent opportunity to come before audiences. All students are therefore expected to take their turn when chosen and receive help and suggestions from the respective teachers. Parents and friends are welcome at these recitals.

Free Advantages and Privileges.—A large chorus will be formed for the purpose of rehearsing the choruses from the oratorios and operas. Those competent and who are willing to attend rehearsals regularly will be admitted free of charge. Ladies' and gentlemen's glee clubs will also be organized and will meet twice a week for practice. Only those students having good voices and who are good readers of music will be entitled to membership in these clubs.

Library.—The conservatory has over two thousand copies of music, by the best composers, all nicely bound and classified. Consequently it is able to rent to the students at a nominal price such music as will meet the demands of an entire course. Students desirous of buying their own music will be at liberty to do so.

TUITION

Fall Term of Fourteen Weeks

(For other terms, prices proportionate)

Vocal Lessons:

Mr. Emslie

Two lessons per week, twenty minutes	$28.00
One lesson per week, thirty minutes	$21.00

Miss Hamilton

Public School music, two lessons per week of forty minutes, in class	$14.00
Private lessons, thirty minutes, two per week	$21.00

Piano Lessons:

Mrs. Emslie

Private lessons, thirty minutes, two per week	$21.00
One lesson per week, thirty minutes	$14.00

Violin Lessons:

Mr. Reynolds

Two lessons per week, thirty minutes	$28.00
One lesson per week, thirty minutes	$14.00

Harmony, Analysis:

In class	$12.00

History, Ear Training:

In class	$8.50

Music Rent	$1.50

Rules and Regulations.—Tuition is payable strictly in advance and the conservatory is in no way responsible for lessons lost through absence or tardiness of the pupils. Students entering after the opening of the term will be charged only from the date of entering. No reduction made for temporary absence of pupils or for lessons discontinued. Students leaving during the term will therefore not be entitled to have any money refunded; only in case of protracted illness will an exception be made in the above stated regulations.

Students pursuing any of the regular courses of study will be permitted to arrange for such instruction in music as in the judgment of the faculty will not interfere with their college work. Students in Home Economics and General Science courses are allowed five credits in music in the requirements for graduation. Students of the conservatory may take up such work in the College and in the School of Agriculture as they are qualified for. The requirements for registration are the same as for regular students.

Students in the conservatory, not graduates of high schools, may, upon recommendation of the director of the conservatory and of the professor of modern languages, take up work in French, German or Spanish.

Further information sent on request.

College Organizations

LITERARY SOCIETIES

The exercises of the forum and reading table give the student a wider horizon, a widening consciousness of his own powers, and an ease in both conversation and public address.

"The Philo-Athenaeum Society" meets in the lecture room of Guggenheim Hall. "The object of this society is to encourage free investigation and promote growth in literary composition, and readiness and fluency of speech."

"The Columbian Literary Society" meets in Horticultural Hall. "This society is organized to train its members in literary work, to instruct them in parliamentary law, and to promote their growth in general knowledge."

Its membership is composed of students of all courses in regular college work. Diplomas are granted to those who faithfully perform their work.

"The Owl Debating Society" meets on Wednesday evenings in the west mathematics classroom. "The purpose of the society is to increase the proficiency of its members in the art of public speaking." All male students of good standing in the college are eligible for membership.

TECHNICAL SOCIETIES

"The Home Economics Club" meets twice a month to discuss events and activities along home economic lines. The club was organized in October, 1909.

"The Agricultural Club" is a scientific society organized and maintained by the students of the Agricultural division. Meetings are held each Monday evening in Horticultural Hall. At these meetings, subjects are discussed relating to the farm, orchard, garden, and experiment stations. Occasionally talks are given by the faculty and other lecturers. Students of good standing receive diplomas from the society upon graduation from the college.

"Engineering Society."—With "The encouragement of original research, the dissemination of these results among its members; and the cultivation of a spirit of mutual assistance in the practice of the profession of engineering" as an object, the Engineering Society of C. A. C.

In the Library

was organized in the fall of 1902. The membership is composed of all students who are pursuing courses in engineering. Many talks of practical worth are given by the professors and engineering students at the meetings which are held every Monday evening in the Electrical Engineering building.

"Agricultural College Branch American Institute of Electrical Engineers."—The students of the Electrical Engineering department have formed a Student Branch of the American Institute of Electrical Engineers. The proceedings of the American Institute of Electrical Engineers are read and discussed, and original papers are presented to the society by the students and the faculty members. All electrical engineering students are eligible for membership.

"The Veterinary Medical Association" was organized in the beginning of the fall term, 1907. This association is composed of veterinary students and college professors, and is devoted to the study of scientific problems along veterinary lines, and to the promotion of the social interests of the Veterinary department. The association meets each Monday evening at seven o'clock in the Pathology building on Laurel street. Graduates of the Veterinary department are granted diplomas from this association only upon the condition that they have faithfully performed seventy per cent of the work required of them. Every student is expected to read at least two original papers on veterinary subjects each term.

College Day in the Foothills

ATHLETIC ASSOCIATION

Officers, 1913-1914

FLOYD CROSS..............................President
JOHN GRANT..............................Secretary

This association has for its object the promotion of collegiate and intercollegiate athletics. All students are eligible for membership, the only requirement being to sign the constitution of the association. The president and secretary are ex-officio members of the Athletic Council, which is made up of three members of the faculty and the two students named. This council directs the general athletic work of the institution.

When a student becomes a member of the association, three dollars of his entrance fee go to the association treasury; and by a unanimous vote of the associated students, a motion was carried asking the college registrar to collect $4.00 from each student upon registration, to pay for a season ticket to all athletic contests excepting the annual athletic smokeless smoker.

The association stands for true sportsmanship and fair dealing, and a strict observance both in letter and in spirit of the agreements of the Rocky Mountain Faculty Athletic Conference.

THE ASSOCIATED STUDENTS

Officers, 1913-1914

MILTON ALLEN.............................President
H. O. STRANGE..................First Vice-President
GLADYS HOBAUGH...........Second Vice-President
R. E. BARNARD..............................Secretary

The "Associated Students" was organized in the fall of 1908. Its object is to promote college spirit, to bring the students into closer fellowship, and to discuss and act upon all matters pertaining to the welfare of the student body and hence our institution. Its value has

On Colorado Field

been shown by the enthusiasm ith which the students discuss the questions brought before them. nd the accuracy of the final conclusions upon these questions of al interest. Its membership includes all "college students." The o s are chosen one from each class and one from the ladies in genera

STUDENT COUNCIL

Officers, 1913-1914

MILTON ALLEN	Chairman
EMILIE BARCLAY	Secretary

The "Student Council" was organized in 1912. Its object is to consider the various subjects of interest to the student body; to recommend times of action in the various student activities, and to consider misunderstandings between the faculty and the students. It is in the nature of an executive committee to the Associated Students. It is composed of one freshman, two sophomores, three juniors, and three seniors, who are elected by the student body. There is, also, one member of the faculty, known as the "faculty advisor," on whom the Council may call for assistance and advice.

MUSICAL ORGANIZATIONS

The Military Band of thirty pieces is an important adjunct to the cadet battalion. This organization receives daily instruction by a competent band master, throughout the college year, and ranks among the best concert bands of the state. The college band takes part in all local parades, military and civil, renders monthly concerts in the chapel during the second semester, and takes part in the program of commencement week. The band is subject to the call of the president for special occasions that may occur from time to time.

A Glee Club, under the care of the director of the conservatory, adds much to the strong musical combination of the school. This organization presents rare opportunities for musical culture, which should assume an important part in a collegiate education.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION

Officers, 1913-1914

NEIL McGRATH	President
ABNER JOHNSON	Recording Secretary
R. A. McGINTY	Treasurer
HERBERT SEAMANS	General Secretary

Object.—The Young Men's Christian Association stands for the highest ideals in college life. Habits formed during college life are seldom broken after graduation. Each year the Colorado Agricultural

College sends forth men to positions of responsibility throughout our country. The association has its existence in the belief that the most effective living is based on the principles exemplified in the life and teachings of Jesus Christ. To bring young men into vital contact with the influence of that life is the fundamental purpose of the association's activities.

Social Activities.—The association serves the student in practical ways. If possible, it gets in touch with him even before he leaves home for Fort Collins. Upon arrival, he is met by members of the New Student Committee. A friendly greeting and an offer of assistance help to break the spell of strangeness and make the new man feel at home in his new surroundings. Rooms are located, boarding places found, assistance given in regard to studies—in fact, everything possible of real service to a new man.

During the first week of school, a "Stag" social is held which brings all the men together for a social time and broadens acquaintance and promotes good fellowship. Various social affairs occur throughout the year in connection with the Young Women's Christian Association.

Employment.—Among the most helpful features of the association is its Employment Department. No fee is charged. Any student desiring to earn all or a part of his expenses is welcome to avail himself of help of this department. During the past year, students were enabled by this means to earn more than two thousand five hundred dollars.

Religious Activities.—The religious work of the association includes Bible and mission study courses, arranged especially for college men. These classes meet each week in the rooms of the men, in the Y. M. C. A. rooms, in the fraternity houses, or in connection with the Sunday schools. The fellowship in these small groups with other young men who are fighting life's battles, is of great value to the young man. Weekly religious meetings are held in Horticultural Hall. Young men

The Cane Rush.

are helped to form and hold to their high standards of Christian manhood.

Information.—The General Secretary is the employed officer of the association and gives all his time to the work. He desires to be of service in every way possible. Feel free to write him for any desired information.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION

Officers, 1913-1914

AUREL LUCE.............................President
WINIFRED MATTOON................Vice-President
SHIRLIE DEAN...................Recording Secretary
ANNA MATHER.............................Treasurer

The Young Women's Christian Association has had a place in this college since 1892. It is a part of the National Young Women's Christian Association, and of the world's organization, and its members feel the broadening effect of this union in spirit with the student women of the world.

Its purpose is to develop, during college days, by intercourse with strong Christian women from all the various churches, the vital religious life which finds is expression in service.

During the opening week of the college year, the association girls meet the new girls at the trains, and give them welcome, and such assistance as they may need in finding the rooms recommended to each from the list of desirable homes filed with the Dean of Women. On Sunday, they are introduced to the church of their preference by the girls of their own denomination, and as the weeks go by, the new girls are helped, guided, and befriended. The association continues its social service during the year in sending flowers to the sick, providing wholesome fun in social afternoons or evenings at the college, furnishing a Rest Room, for women, in Guggenheim Hall, and in such other ways as are from time to time possible.

Bible and mission study classes are provided, and regular midweek devotional services extend further opportunities for religious growth during college days.

The Game of Tennis

COLLEGE PUBLICATIONS

In order that the editors, assistants, and business managers of student publications may receive the maximum training this work affords, the faculty committee on Student Publications, lends its assistance whenever it is needed. Under certain conditions, the editor-in-chief of the Collegian may receive each semester, two credits toward graduation, for work done as editor. Under similar conditions the editor-in-chief of the Silver Spruce may receive two credits the second semester.

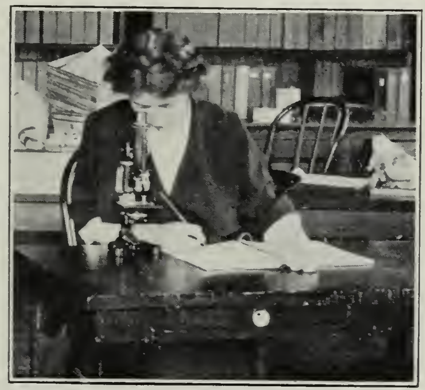
The Rocky Mountain Collegian is a weekly publication put out by the student body, and it is the official publication of that body. It has as its aim the representation, in their true light, of the sentiments of the student body.

The officers are elected in the spring of each year to serve for the following year. The officers thus elected have full control of all matters pertaining to its publication.

Staff for Current Year

JOHN BRYANT	Editor-in-Chief
THOS. McCARTHY	Associate Editor
CLAUDE WAKELAND	Business Manager
ALECK LUNN	Local Editor
JOSEPHINE ALLEN	Society Editor
ANNABEL ANDERSON	Literary Editor
CECIL LAMB	Athletic Editor
DR. I. E. NEWSOM	Alumni Editor

The Silver Spruce is a volume published annually by the junior class. It is a neatly printed, well bound book of two hundred or more pages. Its purpose is to give an accurate review of the school year in its every respect.



In the Botany Laboratory

Staff for Current Year

WILLIAM LEIGH	Editor-in-Chief
ANNABEL ANDERSON	Associate Editor
ROY COTTRELL	Business Manager
OLIVER STRANGE	Advertising Manager
HOWARD KIDDER	Photographer
HARRY GRAHAM	Assistant Photographer
GEERT KRYTHE	Artist
ALMA EYSER	Assistant Artist
BERYL DIXON	Literary Editor
JOSEPHINE ALLEN	Society Editor
JOSEPH COLLOPY	Humorist

News Notes.—This is a weekly publication of seasonable articles on Agriculture, Home Economics, and Engineering subjects, prepared by members of the faculty, and sent by the Division of Agricultural Extension Work to the press of the state, and to about one thousand prominent farm and stock journals throughout the country.

Division of Agricultural Extension

CHAS. A. LORY................Acting Superintendent

The Extension Division is the means by which the results of the work of the experiment station and of the college in general are carried to the state at large. This work at present embraces the following lines of activity: Farmers' Institutes, Agricultural Special Trains, Demonstration Farms, Movable Schools, Boys' and Girls' Agricultural Clubs, Special Service, Rural Education, Farm Management Investigations (in co-operation with the Bureau of Plant Industry, U. S. Department of Agriculture) and Rural School Improvement.

The tabulation of the number served by the various lines during the year ending December 1, 1913, is as follows:

Long's Peak—Visible from the Campus

	Attendance
Farmers' Institutes (34 sessions)	3,740
Special Trains	43,488
Five Movable Schools	420
Farmers' Short Course	40
Housekeepers' Short Course	41
Colorado Farmers' Congress	107
Meetings addressed by State Leader, 72	5,127
Rural School Improvement Service	47,805
Total	100,768

Farmers' Institutes.—In every community there are some farmers who meet with a larger measure of success than do others, farmers who are able to more fully solve the problems of the community. The object of the Farmers' Institute is to bring the practice of all the farmers of the community up to the standard set by these community leaders, and, if possible, to set higher standards for these leaders, themselves. A well balanced program should present both the broad principles and their local application.

It should be the business of the farmers themselves to arrange this program, and the responsibility should rest upon them, not upon the business men of the town nor upon the Agricultural College, although both are always glad to help. Wherever possible, it is strongly recommended that this work be carried on under the direction of a permanent organization.

Agricultural Special Trains.—In co-operation with the various railroad lines of the state, the Agricultural College has operated special institute and demonstration trains, thereby reaching a greater number of people than would be possible by any other means. It is believed that these trains have been productive of much good, and it is hoped that this feature of extension work may be extended. The importance of the results obtained is amply attested by the increase in production in special lines of industry, such as potato growing in mountainous districts, dairying, and also construction, following the operation of the trains.

Demonstration Farms.—Because of the diversity of climate and soil conditions in the various parts of Colorado, it has been thought advisable to undertake the management of demonstration farms and fields in co-operation with individuals, corporations, and associations.

On these farms and fields it is expected to put in operation the principles and practices advocated in the farmers' institutes, and to operate these for profit, using demonstrated successes rather than experiments.

Records are to be kept, and it is hoped to make of these farms and fields actual examples to their localities of the profit of wide agricultural practices.

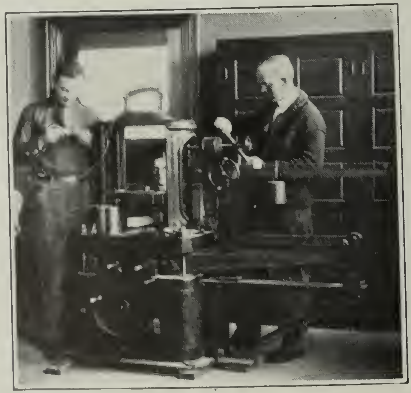
A limited number of these is now being undertaken.

Movable Schools.—Whenever a community wishes a more thorough and comprehensive institute in any special line of agricultural industry than can be given in the ordinary farmers' institutes, a class will be organized with a limited membership and an enrollment fee large enough to pay expenses, to study this subject from one to two weeks. In general, classes should have from 20 to 40 members, with enrollment fee from $1.00 to $2.00 each.

Farm Management Investigations.—In co-operation with the Bureau of Plant Industry, U. S. Department of Agriculture, the College employs a State Leader to direct the work of the County Agriculturists of the state. A very comprehensive law enacted by the Nineteenth General Assembly provides for the employment of county agriculturists by the several counties, under co-operative agreement, if desired and possible, with the Bureau of Plant Industry and the Agricultural College. During the year 1913, Logan, El Paso, Pueblo counties and a group of four counties, Costilla, Saguache, Rio Grande, and Conejos, organized for the purpose, had the service of county agriculturists, and Mesa and Boulder counties completed arrangements for such service in 1914.

Boys' and Girls' Agricultural Clubs.—There are one thousand eight hundred rural school districts in Colorado, in which the agricultural interests are more important than all others. This is a good field for boys' and girls' agricultural and rural life clubs. This work was started by the Colorado Agricultural College in 1910, and has met with considerable success. Four counties are now thoroughly organized and others are asking for assistance in starting the work.

Our plan is to organize these clubs in any county where the County Superintendent and local people are willing to co-operate and help to make it a success. The college furnishes outlines suitable for different localities. These outlines include a reading course for the pupils, a



In the Strength of Materials Laboratory

survey of the school district and essay work. These are intended especially for seventh and eighth grade pupils. Courses are now being prepared for girls' garden and canning clubs. There is no better opportunity for turning the wonderful activity of childhood to the performance of tasks worth while than that now offered by this club work.

Consolidation of School Districts.—No other form of school improvement has achieved such satisfactory results in giving country children all the advantages of a graded school including a full high school as has the consolidation of several districts. The district system of rural schools is well suited to the pioneering age in the settlement of a new country, but it did not stop when the country was all settled and the people continued to cut up existing districts into smaller and smaller units. The result today is that most of the country districts are so small that they do not contain the number of pupils and assessed valuation and other things necessary to make a strong and efficient school. This can now be accomplished only by consolidating two or more of these districts.

The territory included within a four-mile radius from a central point can be easily included in a single district. There are many places in Colorado where this kind of a district will include from two hundred to five hundred children, from six to twelve teachers, and will produce sufficient funds to build a modern central school and support an efficient corps of teachers. Colorado now has a number of consolidated schools and each one is an unqualified success. The children that live beyond reasonable walking distance are transported in covered vans, in charge of careful and competent drivers, thus insuring regularity of attendance, entirely eliminating tardiness and preventing the trouble common to children walking to and from school. The Agricultural College has studied this movement in other states and watched it closely in Colorado, and wherever two or more country districts are so situated that they can unite and build a strong central school, we recommend consolidation. The college will give such help in this work as our finances and working force will permit.

Farmers' and Housekeepers' Week.—Each year the Agricultural College keeps open house to farmers and housekeepers for a week at Fort Collins. For this week a program is prepared which aims to cover the more important phases of agricultural activity within the state. These topics are presented by recognized authorities both within and without the state.

Farmers' and Housekeepers' Week this year will occur January 4-9, 1915.

Special Services.—In so far as it is possible, the college will be glad to respond to requests for advice and help upon individual problems of Colorado farmers. While the amount of this service which it is possible to render is of necessity limited, so far as possible the college will be glad to send trained men to the individual farmer, to advise and assist in the settlement of questions, relative to live stock, dairying, poultry, or potato growing, as well as for general farm crops, such as grain, alfalfa, etc.

Co-operation with Schools.—The college will be particularly glad to assist in the introduction of agriculture and mechanic arts into the public schools wherever its assistance may be desired.

Miscellaneous.—The Agricultural College is constantly called upon to furnish speakers for Farmers' Unions, Grange meetings, and Agricultural Picnics, as well as judges and speakers for local and county fairs. In so far as men and funds are available, the college is glad to comply with these requests. In so far as possible the college, through its extension service, sends information direct to the people of the state on inquiry. During the year 1913, 12,000 letters were written in answer to requests for information on special subjects.

Inquiry concerning any of the above lines of work should be addressed to the Superintendent of Extension, Colorado Agricultural College, Fort Collins, Colorado.

Committee on Rural Education.—During the past year this committee had charge of arranging for instruction in agriculture and home economics, which was given before the normal teachers' institutes. It also provided speakers before various teachers' meetings and answered correspondence relating to the introduction of the above subjects in rural schools. The activity of the community is continued along the above lines. The committee is prepared to answer correspondence and do whatever is in its power to further the interests of agricultural education. Communications should be addressed to S. Arthur Johnson, Chairman.

The Farmers' Congress of Colorado.—The Fourth Annual Session of the Farmers' Congress convened at the college, January 16, 1914. This is the only organization in the state affording an opportunity for effective co-operation between the various organizations for the promotion of agricultural development and education within the state.

The object of the Farmers' Congress as set forth in the constitution is as follows:

Article II.—Object

Section 1.—The object of the Farmers' Congress of Colorado shall be to furnish opportunity for effective co-operation between the various organizations for the promotion of agricultural development and education within the state, and to act in an advisory capacity to the State Board of Agriculture.

The officers for 1915 are as follows:

President, C. L. Hover, Longmont
First Vice-President, John Lennox, Colorado Springs
Second Vice-President, R. A. Chase, Fort Morgan
Secretary-Treasurer, M. N. Dillon, Fort Collins

Executive Committee:
Mrs. Agnes Riddle, Denver, Denver District
C. M. Stitt, Brush, Plains District
W. H. Harrison, Kremmling, Northwestern District
W. P. Price, Montrose, Western District
Mrs. Rosepha Pulford, Durango, Southwestern District
R. A. Chisholm, Del Norte, San Luis Valley District
C. F. Burke, Rocky Ford, Arkansas Valley District

THE EXPERIMENT STATION

OFFICERS

CHARLES A. LORY, LL. D	President
C. P. GILLETTE, M. S	Director
L. M. TAYLOR	Secretary
MARGARET MURRAY	Executive Clerk

HEADS OF SECTIONS

C. P. GILLETTE, M. S., Director	Entomologist
WM. P. HEADDEN, A. M., Ph. D	Chemist
G. H. GLOVER, M. S., D. V. M	Veterinarian
WALTER G. SACKETT, B. S	Bacteriologist
ALVIN KEYSER, A. M	Agronomist
B. O. LONGYEAR, B. S	Botanist
GEO. E. MORTON, M. L., B. S. A	Animal Husbandman
E. B. HOUSE, B. S. (E. E.) M. S	Irrigation Engineer
E. P. SANDSTEN, Ph. D	Horticulturist
WILLIAM P. LITTLE	U. S. Expert-in-Charge Horse Breeding

SPECIALISTS AND ASSISTANTS

*J. O. WILLIAMS, B. S. A	U. S. Expert-in-Charge Horse Breeding
V. M. CONE, B. S	Irrigation Investigations
ROBERT E. TRIMBLE, B. S	Assistant Irrigation Investigations
P. K. BLINN, B. S., Rocky Ford	Alfalfa Investigations
EARL DOUGLASS, M. S	Assistant Chemist
L. C. BRAGG	Assistant in Entomology
S. ARTHUR JOHNSON, M. S	Assistant Entomologist
I. E. NEWSOM, B. S., D. V. S	Veterinary Pathologist
JAMES HUTTON	Assistant Horse Breeding
J. W. ADAMS, B. S., Cheyenne Wells	Agronomy Assistant, Dry Land Investigations
ELLWOOD D. ROOD, A. B	Assistant Chemist
PAUL S. JONES, B. S	Assistant Irrigation Investigations
W. W. ROBBINS, M. A	Assistant Botanist
RALPH L. PARSHALL, B. S	Assistant Irrigation Investigations
JAMES D. BELL, B. S	Assistant Irrigation Investigations
GEORGE M. LIST, B. S	Assistant in Entomology

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*Resigned.

The Agricultural Experiment Station, organized under the laws of Congress, is an integral part of the Agricultural College. As the endowment given by the United States is a trust fund for the special purpose of scientific investigation of agricultural problems, no part of the fund can be used for paying salaries of instructors. Bulletins are issued as a means of disseminating the results of investigations. Funds appropriated under the Hatch Act, may be used for investigations in agricultural subjects according to the needs of the various states. The Adams Act fund is for original scientific research, only.

In order that the results of scientific investigation may be utilized, object lessons, explanations, and practical applications are needed. For example, the development or discovery of a plant adapted to particular conditions may be a proper subject of investigation under Government funds, but the production of improved seed when obtained and its distribution is not within the activities of the Government funds. Such distribution is, however, important and necessary to utilize the scientific investigations, and inquiries other than scientific may be of very great value in the improvement of agricultural practice. This need is met by the state appropriations. Thus the Legislature of Colorado made appropriations in 1911 amounting to $45,000 for inquiry, investigation, and dissemination of information concerning potatoes, fruit, dry farming, grains and plants, animal husbandry, horse breeding, and poultry.

The Experiment Station, therefore, supplements the work of the college as an instructional institution. It serves to give the institution an atmosphere of scientific investigation. The results of the work, published in bulletins in editions of from five to twenty thousand, are scattered widely, not only through Colorado, but through every other state and civilized nation of the world.

The results of investigations and of related inquiries have been published in 195 bulletins and numerous pamphlets and circulars. These are sent free, without postage, through the mails by authority of Congress, under the signature of the director. These bulletins cover investigations with irrigation, sugar beets, alfalfa, potatoes, grains, stock

Bacteriological Laboratory

feeding, dairying, soils, weeds, fruits, cantaloupes, plant diseases, injurious insects, etc. The investigations of the experiment station laid the foundation for the development of the sugar beet industry in the state, so that, when favorable economic conditions were reached, the results of the scientific investigations were available and development was rapid.

One of the principal means of measurement of water adopted throughout the western United States and adjacent countries is the result of the studies of our Experiment Station. The investigations in irrigation were the basis of the successful defense of the State of Colorado against the attack from the State of Kansas, an attack which, if successful, would have almost entirely prevented the further development of irrigation in the western United States. The rapid development of the past few years has come since that case was decided by the U. S. Supreme Court.

The studies of the codling moth, plant lice, leaf roller, and other pests, have resulted in intelligent control of these important injurious insects. The station has also been instrumental in the development of varieties of grain adapted to high altitudes like the San Luis Valley. It has also given considerable attention to the plains and has been a help to settlers there. It has prevented the destruction of the cantaloupe, and has found the cause of some obscure troubles in the fruit industry. It has also determined the causes of the so-called "brown spots," or "black alkali," of some of our soils. The results of this investigation will prove a great benefit to the agriculture of the West. The work made possible by the state appropriations has multiplied the potato industry of the state many times and helped to make it more profitable. The station employes answer thousands of letters of inquiry annually.

The various lines of activity make the station of great service to the state and nation, and make it a strong instructional department of the college, not alone for the students on the campus, but for thousands of people throughout Colorado and other states.

A leaflet giving the names of the bulletins that have been printed will be furnished upon application to the director. Any available bulletins will be sent on request. Future publications will be sent regularly if a request is made to be placed on the mailing list.

On the College Farm

Register of Students

In the following list, An. H. stands for Animal Husbandry; Agro., for Agronomy; Agr., for Agriculture; C. E., for Civil and Irrigation Engineering; G. S., for General Science; H. E., for Home Economics; Eng., for Engineering; E. E., for Electrical Engineering; Ent., for Entomology; For., for Forestry; H., for Horticulture; M. E., for Mechanical Engineering; Vet., for Veterinary Medicine.

GRADUATE STUDENTS

Olson, Halle Dale	Fort Collins
Schaefer, Wilbur C	Weldona
Wilson, Maryetta	What Cheer, Iowa

SENIORS

NAME	COURSE	ADDRESS
Allen, T. Carlin	C. E	Denver
Allen, Milton W	An. H	Denver
Antles, Harry	Agro	Grand Junction
Barclay, Emilie	H. E	Longmont
Bryant, John	Vet.	Flagler
Carpenter, Carlos C	For.	Palisade
Chase, Myra	H. E	Fort Morgan
Coffin, Roy G	For.	Fort Collins
Collins, Cassius	Vet.	Fort Collins
Connor, Leggio	An. H.	Denver
Cross, Floyd	Vet.	Fort Collins
Decker, Elbert	C. E	Paonia
Divelbiss, Edward	H.	Pueblo
Dreyfuss, Leonard	For.	Shreveport, Louisiana
Dutton, Bert E	E. E	Pagosa Springs
Edmondson, William O	For.	Berthoud
Edmondson, Willard E	M. E	Berthoud
Emigh, Hazel	H. E	Cheyenne, Wyoming
Eppstein, Harvey	C. E	Yountville, California
Fetz, Rudolph	Agro	Montrose
Gates, F. Herbert	Ent.	Denver
Golden, Homer	C. E	Longmont
Grant, John	An. H	Leadville
Green, William	Vet.	Leadville
Hale, Roy J	Agro	Taylorville, Illinois
Hartford, Albert	C. E	Berthoud
Havighorst, Russell	E. E	Fort Collins
Headden, Helen	H. E	Fort Collins
Klinefelter, Lee	E. E	Fort Collins
Kraemer, Helen	H. E	Denver
Lace, Mona V	H. E	Grand Junction
Lahrman, Carl	E. E	Fort Collins
Looper, Harvey S	C. E	Sheridan Lake
Luce, Aurel	H. E	Loveland
Marks, Helen	H. E	Fort Collins
Mather, Anna	H. E	Fort Collins
McCann, Roud	An. H	Maybelle

NAME	COURSE	ADDRESS
McCreery, Edith	H. E	Greeley
McCullah, Homer V	Vet.	Fort Collins
McGrath, Neill	An. H	Lamar
McKittrick, Roy	An. H	Rocky Ford
Montinola, Manuel	C. E	Taro Iloilo, Philippine Islands
Murphy, Harry	C. E	Eaton
Neugebauer, Edna	H. E	Fort Collins
Nuckolls, C. Oscar	C. E	Granby
Nye, Elwood	Vet.	Rigby, Idaho
Officer, Charles C	Vet.	Fort Collins
Pollock, John	Ent.	Fort Collins
Richardson, Dorsey F	M. E	Delta
Sanborn, Ruth	H. E	Boulder
Seaman, Raymond	C. E	Denver
Sheeley, Ross	An. H	Fort Collins
Shutt, Marjorie	H. E	Fort Collins
Stewart, Thomas	Vet.	Denver
Taylor, Mrs. Mary P. C	H. E	Fort Collins
Wakeland, Claude	Ent.	Lay
Webster, Charles	Vet.	Monte Vista
Wharton, Hazel	H. E	Fort Collins
White, Asbury	C. E	Pueblo
Williams, Elizabeth	H. E	Fort Washakie, Wyoming

JUNIORS

Allen, Eva	H. E	Fort Morgan
Allen, James	An. H	Pueblo
Allen, Josephine	H. E	Denver
Allen, Mavea	H. E	Denver
Ames, Cyrus	Vet.	Parker
Ames, Mary	H. E	Parker
Anderson, Annabel	G. S	Louisville, Kentucky
Artschwager, Ernest	Ent.	Linkuhwen, Germany
Atkinson, Frank	C. E	Colorado Springs
Bader, Ernest	Agro	Loveland
Barnard, Alice	H. E	Lamar
Beggs, Stuart Wm	Vet.	Fort Morgan
Bevan, Wendell	Ent.	Fort Collins
Burton, Herbert	Vet.	Florissant
Collopy, Joseph	E. E	Fort Collins
Comstock, Salome	G. S	Fowler
Cotton, Louise	H. E	Denver
Cottrell, Roy	C. E	Fort Collins
Davis, Ruth	H. E	Fort Collins
Dean, Shirlie	H. E	Denver
Dickman, Andrew	Vet.	Poncha Springs
Dimmitt, Harry	M. E	Ottumwa, Iowa
Dixon, Beryl	H. E	Fort Collins
Dodsworth, William E	Vet.	Goldfield
Downey, Mable	H. E	Fort Collins
English, James Gordon	C. E	Greeley
Eyser, Alma	H. E	Fort Morgan
Fauber, Herman	H.	Montrose
Gillespie, Glenn	Ent.	Loveland
Gillette, Esther	H. E	Fort Collins

NAME	COURSE	ADDRESS
Goodman, Albert	Vet.	Pueblo
Graham, Harry	C. E	Vinton, Iowa
Graves, Nellie	H. E	Arvada
Groom, Walter	An. H	Boulder
Hammond, John J	C. E	Los Angeles, California
Hays, Pauline	H. E	Kinnear, Wyoming
Hennebold, August B	E. E	Pueblo
Hopkins, Carl	Agro	Denver
Hugins, Walter E	C. E	Littleton
Jamieson, Harriet	H. E	Trinidad
Johnson, Abner G	C. E	Fort Collins
Johnson, Adolph T	M. E	Denver
Kern, Lena	H. E	Windsor
Kidder, Harold	C. E	Loveland
Knapp, Homer	An. H	Las Animas
Krythe, Geert	Agro	Roden, Holland
Lamb, Cecil P	Vet.	Fort Morgan
Leigh, William E	H.	Lamar
Lighthall, Earl	Vet.	Fort Collins
Limbocker, T. Forrest	Ent.	Pueblo
Louden, George R	Vet.	Arvada
Lunn, J. Aleck	C. E	Fort Collins
Marks, Elias O	E. E	Sterling
Maxwell, Frank J	Vet.	Georgetown
McCarthy, Thomas	C. E	Jansen
McKune, Emery F	H.	Fort Collins
Morrison, Wallace K	M. E	Fort Collins
Morse, Carl G	An. H	Denver
Nevius, Harry C	An. H	Longbeach, California
Osborn, L. C	C. E	Loveland
Parker, Eva F	G. S	Pueblo
Ray, Glenn S	Agro	Osceola, Nebraska
Saboe, Grace	H. E	Seattle, Washington
Sandhouse, Herman A	An. H	Fort Collins
Slayton, Thomas N	Vet.	Wellington
Smith, Frank J	Agro	Windsor
Smith, Thomas R	C. E	Denver
Smith, Guy L	E. E	Meeker
Smith, Samuel A	C. E	Castle Rock
Sorenson, J. Clarence	Vet.	Rigby, Idaho
Stevens, Doris	H. E	Loveland
Strange, Harvey O	Agro	Castle Rock
Strecker, George M	E. E	Fort Collins
Strong, Richard	An. H	Lamar
Swanson, Alben J	E. E	Arvada
Templin, Laten	An. H	Trinidad
Twitchell, John Mac	Vet.	Canon City
Veverka, Felix A	An. H	Sterling
Warner, Pauline	H. E	Fort Collins
Weaver, Daniel S	Vet.	Fort Collins
Weldon, Margaret J	G. S	Denver
Wilber, Mary Louise	H. E	Denver
Wilson, Frank B	Vet.	Palisade
Woods, Harry M	For.	Farmington, New Mexico
Woods, Myrtle	H. E	Cripple Creek
Zenor, Raymond	Vet.	Fort Collins

SOPHOMORES

NAME	COURSE	ADDRESS
Clark, Alford	Agr.	Castle Rock
Baker, Wilfred	Eng.	Meeker
Ball, Floyd	Agr.	Lamar
Barnard, Russell	Eng.	Denver
Beebe, Ruth	H. E	Cripple Creek
Benson, Joseph	Eng.	Arvada
Bluebaugh, James V.	Agr.	Goodrich
Bowhay, Leonard	Agr.	Denver
Briggs, George	Eng.	Denver
Buell, Jewett	Agr.	Haswell
Buchanan, Nettie	H. E	Durango
Buck, Lela	H. E	Arvada
Bull, Sidney	Agr.	Grand Junction
Burckhalter, George	Agr.	Grand Junction
Calhoun, Wendell	Agr.	Denver
Carman, Mary	H. E	Denver
Cheney, Orpha	H. E	Fort Collins
Chisholm, Francis	Agr.	Del Norte
Coffin, Ruby	H. E	Longmont
Conrey, Stephen	Eng.	Fort Collins
Dake, Gertrude	H. E	Fort Collins
Darrow, Earl B.	Agr.	Fort Collins
Day, Maitland	Eng.	Victor
Doke, Horace	Eng.	Greeley
Doud, Lee	Agr.	Denver
Dupuy, Albert	Eng.	Montrose
England, Herbert	Eng.	Independence
Farr, Jennie	H. E	Denver
Fisher, Cecil	H. E	Pueblo
Fluke, Charles	Agr.	Grand Junction
Frisbee, Otto	Agr.	Lamar
Galligan, Gertrude	H. E	Pueblo
Garvin, Victor	Agr.	Denver
Gates, George Clay	Agr.	Monte Vista
Giddings, Ralph	Agr.	Fort Collins
Ginter, Roy	Agr.	Rocky Ford
Graeber, Lawrence	Agr.	Pueblo
Graham, Laura	H. E	Pueblo
Haakenson, Harry	Agr.	Edgewater
Habermann, Louis	Agr.	Rico
Hagaman, Arthur	G. S	Lamar
Hale, Joseph	Agr.	Loveland
Ham, Letty	H. E	Hasty
Hardie, Paul	Eng.	Victor
Harris, Helen Marie	H. E	Denver
Haythorn, Joseph	Agr.	Eaton
Hewitt, Edna	H. E	Platteville
Hibner, Ami R.	Eng.	Three Oaks, Michigan
Hobaugh, Gladys	Agr.	Montrose
Hoch, Arnold	Eng.	Yuma
Hoffman, Lydia	H. E	Fort Collins
Hopper, Everett	Agr.	Monte Vista
Huff, Esther	H. E	Colorado City
Husted, Elbert	Agr.	Denver
Ingram, Lester	Agr.	Pitkin

NAME	COURSE	ADDRESS
Johnson, Lura	H. E	Wray
Kern, Ruth	H. E	Fort Collins
King, Ben	Agr.	Fort Collins
Kinghorn, Glenn	Eng.	Fort Collins
Kinney, Herbert	Eng.	Denver
Knight, Natalie	H. E	Boulder
Kobey, Harold	Agr.	Aspen
Koppe, Grace	H. E	Delta
Law, George	Eng.	Fort Collins
Leiper, Thomas	Agr.	Denver
Mattoon, Winifred	H. E	Loveland
McCluskey, Harry	Agr.	Cope
McLeod, William	Eng.	Denver
Mercer, George	Agr.	Greeley
Morrison, James	Agr.	Fort Collins
Murray, Edward	Eng.	Fort Morgan
Nevitt, John V	Agr.	Monte Vista
Norris, Hualapai	H. E	Denver
Paxton, George	Eng.	Aspen
Plumb, Charles O	Agr.	Greeley
Powell, Ben F	Eng.	Manzanola
Raber, Leon	Eng.	Del Norte
Rhone, Laura	H. E	Grand Junction
Ricketts, Stanley	Agr.	Fort Collins
Robinson, June	H. E	Denver
Roth, Walter	Agr.	Denver
Sackett, Thorwald	Eng.	Telluride
Schmitt, Lucille	H. E	Colorado Springs
Scoggin, W. Dean	H. E	Boulder
Searles, Willett	Eng.	Cripple Creek
Shipman, Charles	Eng.	Golden
Stiers, Flavious	Eng.	Canon City
Strock, Glen	Agr.	Longmont
Strong, William	G. S	Lamar
Sweitzer, L. Morgan	Agr.	Delta
Swink, Ralph	Agr.	Rocky Ford
Treichler, Carl	Agr.	Pueblo
Tucker, Victor	Agr.	Craig
Vernold, Hedwig	H. E	Telluride
Wear, Byron	Agr.	Fort Collins
Weigand, Leslie	Agr.	Rocky Ford
Weller, Charles M	Eng.	Denver
West, Raymond L	Eng.	Edgewater
Whiting, Helen	H. E	Denver
Witherbee, Max O	Eng.	Brighton
Wright, Harold	Agr.	New York City

FRESHMEN

Abbott, Earl	Eng.	Fort Collins
Adams, Bessie	H. E	Ouray
Adams, Nyal	Eng.	Monte Vista
Adams, Theodore	Agr.	Lamar
Alkire, Edward	Vet.	Fort Collins
Alstead, Ralph	Vet.	Milliken
Anderson, Arthur	Eng.	Denver
Antles, Leo	Agr.	Grand Junction

NAME	COURSE	ADDRESS
Arnold, Lutie	H. E	Denver
Artt, Jessie	H. E	Delta
Axtens, Stephen	Eng.	Fort Collins
Axtens, Edith	H. E	Fort Collins
Baker, Edith	H. E	Fort Collins
Baker, Lena	H. E	Fort Collins
Barkley, Lucille	H. E	Fort Collins
Batchelor, Burdie	H. E	Canon City
Becker, Roscoe	Vet.	Fort Collins
Bettcher, Edward	Agr.	Denver
Blair, Genevieve	H. E	Colorado Springs
Blaney, Fern	H. E	Greeley
Bollinger, Fred	Eng.	Thayer, Kansas
Branson, Thomas	Vet.	Loveland
Breeden, Ralph	Agr.	Bayfield
Briggs, Bessie	H. E	Fort Collins
Bruner, Glen	Eng.	Sterling
Burritt, Hiram	Agr.	Austin
Burton, Rhoda	H. E	Pueblo
Burton, Margaret	H. E	Pueblo
Burton, Edith	H. E	Florrisant
Bush, Harry	Eng.	Colorado Springs
Cahill, Barry	Eng.	Fort Collins
Campbell, Vera	H. E	Fort Collins
Cannon, Raymond	Agr.	Pueblo
Carnahan, Clarence	Vet.	Grand Junction
Chase, Charles	Agr.	Sedalia
Collopy, Mary	H. E	Fort Collins
Coulter, Ferne	H. E	Fort Morgan
Cox, Clarence	Agr.	Collbran
Crane, Nellie	H. E	Fort Collins
Crie, Robert	Eng.	Rock Springs, Wyoming
Crews, Don	Agr.	Denver
Dabelich, Nicholas	Eng.	Leadville
Danielson, Myrtle	H. E	Fort Collins
Davis, Clifford	Eng.	Canon City
Davis, Florence	H. E	Denver
Decker, Wesley	Vet.	Paonia
Decker, Wallace	Vet.	Paonia
Dickinson, Esther	H. E	Fort Collins
Dillon, Olga	H. E	Silverton
Doehling, Carl	Eng.	Denver
Dormer, Ira	Agr.	Castle Rock
Douglas, Walter	Eng.	Palisade
Drager, Myron	Eng.	LaPorte
Early, Florence	H. E	Berthoud
Ehle, Archie	Agr.	Independence, Missouri
Edler, Ada	H. E	Denver
English, Ross	Agr.	Greeley
Exter, Herbert	Eng.	Gunnison
Falk, Alfred	Eng.	Davenport, Iowa
Feeney, Jerome	Eng.	Fort Collins
Feldman, William	Vet.	Paonia
Ferguson, Bruce	Eng.	Eckert
Finger, Ted	Eng.	Fort Collins
Finney, Maude	H. E	Fort Collins
Fisher, Raymond	Agr	Akron

NAME	COURSE	ADDRESS
Flowers, Beulah	H. E	Fort Collins
Fluke, Fred	Eng.	Grand Junction
Foster, Norman	Agr.	Denver
Foster, Roy	Vet.	Loveland
Frasier, Alice	H. E	Montrose
Freed, Ralph	Eng.	Castle Rock
Gage, Elizabeth	H. E	Denver
Gallaher, Victor	Agr.	Pueblo
Gay, Agnes	H. E	Golden
Girard, Lila	H. E	Denver
Gorton, Max	Eng.	Kiowa
Graham, Homer	Eng.	Montrose
Graham, Roy	Agr.	Longmont
Graves, Clarence	Agr.	Broomfield
Griffin, Myron	Eng.	Fort Collins
Grigsby, John	Vet.	Wray
Grigsby, George	Eng.	Wray
Hackett, Wayne	Eng.	Fort Collins
Hall, Grace	H. E	Fort Collins
Hankins, Joseph	Agr.	Berthoud
Hartman, Samuel	Agr.	Hotchkiss
Haskins, Garnett	H. E	Platteville
Hellbeck, Oscar	Eng.	Pueblo
Hendrickson, Edwin	Agr.	Pueblo
Henry, Merrill	Agr.	Paonia
Hiner, Edna	H. E	Fort Collins
Hix, Beulah	H. E	Estes Park
Hoffman, Coy	Eng.	Fort Collins
Hollis, George	Eng.	Holly
Honnold, Irene	H. E	Hayden
Hover, Eugene	Eng.	Lamar
Hubbard, Bernice	H. E	Glenwood Springs
Humphrey, Foster	Eng.	Pueblo
Hurdle, John	Eng.	Fort Collins
Hutton, Alexander	Agr.	Fort Collins
Iles, Thomas	Vet.	Axial
Ikeda, Kunihei	Agr.	Awano Mura, Japan
Jenkins, Elsie	H. E	Denver
Jenkins, Paul	Eng.	Mosca
Jenness, Paul	Agr.	Denver
Jensen, Karl	Vet.	Gypsum
Johnson, George	Vet.	Denver
Joy, Harold	Agr.	Denver
Keenan, Pearl	H. E	Rocky Ford
Kidder, Waldo	Agr.	Loveland
Kinney, Dwight	Agr.	Colorado Springs
Kinnison, Florence	H. E	Fort Collins
Kirby, Robert	Agr.	Lincoln, Nebraska
Knieling, Walter	Agr.	Denver
Knoll, Dallas	Agr.	Berthoud
Koppe, Minnie	H. E	Delta
Kreutzer, Agnes	H. E	Fort Collins
Lamm, Hazel	H. E	Golden
Leach, Charlotte	H. E	Denver
Lee, John C.	Eng.	Denver
Lee, Joe	Agr	Monte Vista
Light, Nellie	H. E	Colorado Springs

NAME	COURSE	ADDRESS
Light, Fred	Agr.	Snow Mass
Linebarger, Hugh	Agr.	Tiffany
Loss, Robert	Eng.	Montrose
MacArthur, Robert	Eng.	Monte Vista
McCarty, William	Eng.	Eaton
McCrum, Gertrude	H. E	Denver
Madarez, Jesse	Agr.	Denver
Magee, Anna	H. E	La Junta
Makepeace, Laura	H. E	Fort Collins
Mallett, Gladys	H. E	Hotchkiss
Martin, Horace	Agr.	Waverly
May, William	Agr.	Ouray
McCandless, Leon	Vet.	Denver
McClain, Lida	H. E	Sterling
McGregor, James	Eng	Fort Collins
McKeeney, Harold	Eng.	Lamar
McKeown, Robert	Agr.	Fort Collins
McKinley, Howard	Eng.	Ault
McLaughlin, Richard	Eng.	Denver
Meyer, Eddie	Agr.	Fort Collins
Miller, Mary	H. E	Fort Collins
Miller, Zareefa	H. E	Fort Collins
Miller, Raymond	Agr.	Rifle
Moore, Creigh	Agr.	Montrose
Morris, Walter	Eng.	Las Animas
Morris, Floyd	Agr.	Milliken
Myers, Vere	Vet.	Fort Collins
Nelson, Myrtle	H. E	Fort Collins
Nelson, Joseph	Eng.	Paonia
Nicholson, Milton	Agr.	Arvada
Nutter, Kathleen	H. E	Delta
Ogle, Fred	Eng.	Fort Collins
Overbaugh, Ethel	H. E	Rocky Ford
Pargin, Sylvia	H. E	Tiffany
Park, Cyril	Agr.	Denver
Parker, Gretchen	H. E	Fort Collins
Patterson, Clarence	Agr.	Denver
Paulsen, Heneritta	H. E	Denver
Penley, Dora	H. E	Sedalia
Penley, Gerald	Agr.	Sedalia
Polhamus, Caroline M.	Eng.	Fort Collins
Polhamus, Loren G.	Eng.	Fort Collins
Putty, Paul	Eng.	Fort Collins
Relyea, Edward	Agr.	Joliet, Illinois
Richards, Russell	Eng.	Littleton
Robinson, Ralph	Agr.	Denver
Rominger, Hilda	H. E	Saguache
Rundahl, Earl	Vet.	Canon City
Sarchet, Marie	H. E	Fort Collins
Sargent, Elmer L.	Agr.	Fort Collins
Schneider, William	Agr.	Denver
Schulz, Pauline	H. E	La Junta
Scott, William	Vet.	Fort Collins
Seelinger, Earl	Eng.	Greeley
Shaffer, Arthur	Agr.	Denver
Shepardson, Charles	Agr.	Fort Collins
Shotwell, Robert	Agr.	Denver

NAME	COURSE	ADDRESS
Small, Marion	H. E	Denver
Smith, Ralph	Agr.	Fort Collins
Smith, Earl	Agr.	Carr
Smith, Bessie	H. E	Denver
Smith, Harvey	Eng.	Windsor
Spencer, Cozette	H. E	Montrose
Spencer, Harry	Eng.	Montrose
Spurgeon, Marie	H. E	Longmont
St. Clair, Katherine	H. E	Fort Collins
Stebbins, Clarence	Agr.	Denver
Strong, David H. M	Eng.	Englewood
Stroup, Harry	Eng.	Monte Vista
Swartz, Helen	H. E	Fort Collins
Swayze, Harry	Vet.	Denver
Sweetman, Philip	Agr.	Las Animas
Sylvester, Charles	Agr.	Denver
Talbot, Georgia	H. E	Denver
Taylor, Clifford	Agr.	Fort Collins
Thompson, Charlie	Eng.	Montrose
Thompson, Virginia	H. E	Loveland
Tucker, Rodney	Agr.	Craig
Tully, Kathleen	H. E	Fort Collins
Van Horne, Leslie	Agr.	Beatrice, Nebraska
Wade, Richard	Eng.	Perry, Oklahoma
Ware, Eva	H. E	Ogden, Utah
Waterman, Clarence	Agr.	Denver
Watts, Florence	H. E	Timnath
Weigand, Harry	Vet.	Rocky Ford
Welty, John	Vet.	Boulder
Wherren, Guy	Agr.	Greeley
White, Claude	Agr.	Loveland
Whiting, Frank	Eng.	Windsor
Widney, Harold	Agr.	Denver
Williams, J. Harold	Eng.	Denver
Wilmot, Marion	H. E	Denver
Wilmot, Clement	Agr.	Denver
Winslow, Irene	H. E	Fort Collins
Woodard, Susan Lucille	H. E	Sterling
Woolley, George	Agr.	Denver
Yager, Edward	Eng.	Lamar
Zimmerman, Orville	Agr.	Fort Collins
Zimmerman, Marie	H. E	Fort Collins

UNCLASSIFIED

Akin, Eunice	Fort Collins
Apeseche, Ovidio B.	San Juan, Argentine
Boyack, Breeze	Grinnell, Iowa
Bozorgzadih, Ebrahim	Shiraz, Persia
Briggs, Walter	Fort Collins
Colton, O. C.	Fort Collins
Davis, Paul J.	Glenn, California
Eaves, Phyllis	Denver
Ferguson, Ida W.	Fort Collins
Ferris, William	Denver
Hartman, Donna	Hotchkiss
Harwood, Mrs. Jessie	Silverton
Hilderman, Marjorie	Sterling

Hise, Henry L.	Shamrock, Texas
Hodge, Bess	Fort Collins
Hull, Ethel	Fort Collins
Humphrey, Helen	Fort Collins
Jackson Philip	Wray
Kickland, W. A.	Fort Collins
Kinney, Jane	Fort Collins
Law, Fred	Fort Collins
Linger, Earl	Denver
Long, Roy S.	Fort Collins
McClain, Lura	Padrone
McCord, Calvin	Pueblo
McCord, Odell	Pueblo
McKeown, Stewart	Fort Collins
Musa, Khan	Tabriz, Persia
Olden, Harry H.	Fort Collins
Peterson, Dan. E.	Colton, South Dakota
Pohlman, Helen	Cincinnati, Ohio
Reed, Mrs. Jack	Fort Collins
Reed, E. J.	Fort Collins
Seamons, Herbert	Wichita, Kansas
Shotwell, Howard	Denver
Stephens, Donald R.	Longmont
Tudor, Alven O.	Fort Collins
Tully, Isabel	Fort Collins
Watson, Iva C.	Fort Collins
Weiss, Lela	Del Norte
White, Mary E.	Denver
Williams, Mrs. Nita C.	Denver
Williamson, Hazel	Denver
Yeatman, Adaretta	Cincinnati, Ohio

CONSERVATORY OF MUSIC

Akin, Eunice	Fort Collins
Akin, Phebe	Timnath
Alpert, Ethel	Fort Collins
Arnold, Lutie	Denver
Arnold, Marie	Raton, New Mexico
Auld, Matthew	Fort Collins
Austin, Lillian	Oregon, Missouri
Baker, Charlotte	Fort Collins
Barlow, Florence	Greenville, Michigan
Bay, Mabel	Fort Collins
Beebe, Lucy	Fort Collins
Benedict, Gertrude	Fort Collins
Blaker, Nilea	Fort Collins
Boston, Celia	Fort Collins
Brenniman, Clifton	Fort Collins
Brose, Clara	Fort Collins
Brooks, William	Fort Collins
Brown, Jay	Folsom, New Mexico
Brownell, Wm.	Fort Collins
Brunstein, Rose	Fort Collins
Brunstein, Effie	Fort Collins
Brunstein, Lillian	Fort Collins
Brunstein, Harry	Fort Collins
Bull, Sidney	Grand Junction
Clark, Bertha	Delta

Collins, Julian	Fort Collins
Cooke, Elbertine	Fort Collins
Deal, Nida	La Porte
Dean, Shirlie	Fort Collins
Dickinson, L. E.	Peyton
Dickinson, Esther	Fort Collins
Drager, Dorothy	Fort Collins
Drake, Lorada	Fort Collins
Drake, Olive	Fort Collins
Eaves, Phyllis	Denver
Fessler, Margaret	Williamsport, Pennsylvania
Fetters, Winnie	Kremmling
Fields, Blanch	Fort Collins
Fisher, Cecile	Pueblo
Foote, Edna	Loveland
Forsman, Eva	Berthoud
Frank, Ralph	Fort Collins
Frison, Paul	Ten Sleep, Wyoming
Garrett, Irene	La Porte
Gill, Anna	Fort Collins
Graham, G. Philip	Fort Collins
Griffiths, Lulu	Montrose
Halderman, Iva	Fort Collins
Ham, Amy	Hasty
Hammilton, Carrie	Washington, Iowa
Hampton, Lucille	Palisade
Hartman, Donna	Hotchkiss
Hilderman, Marjorie	Sterling
Hubbell, Betty	Fort Collins
James, Clarence	Lamar
Johnson, Victor	Greeley
Johnson, Lura	Wray
Kenney, Edna	Colbran
Kinney, Jean	Fort Collins
Klinefelter, Lee	Fort Collins
Lahrmann, Carl	Fort Collins
Leonard, Ella	Fort Collins
Law, George	Fort Collins
Lawrence, Gwendolyn	Fort Collins
Liggett, Floyd	Fort Collins
Lustin, Laura	Eagle
Marks, Helen	Fort Collins
McElwain, P.	Fort Collins
Manzey, Goldie	Fort Collins
Manzey, Preston	Fort Collins
McClain, Laura	Padroni
McClain, Wm.	Sterling
McCrum, Gertrude	Denver
Medic, Josephine	La Porte
Meyers, Bertha	Fort Collins
McGregor, Ella	Fort Collins
Miles, Arthur	La Jara
McLachlan, Andrey	Craig
Morrison, Imogene	Colbran
Mosier, Garnett	Fort Collins
Mosier, Everett	Fort Collins
Moore, Rebecca	Gardner, North Dakota
Mullings, Mae	Alamosa
Murphy, P. J.	Fort Collins

Nogal, Ruth	Eagle
Norville, Bernice	Boulder
Overbaugh, Ethel	Rocky Ford
Pargin, Sylvia	Tiffany
Penley, Dora	Sedalia
Petty, Henrietta	Fort Collins
Pohlman, Helen	Cincinnati, Ohio
Rankin, Vivian	Fort Collins
Reed, Florence	Williamsport, Pennsylvania
Roach, Helen	Loveland
Roberts, Harvey	Fort Collins
Runge, W. E.	Fort Collins
Sargent, Helen	Fort Collins
Sargent, Cecil	Fort Collins
Sannier, Pauline	Weldona
Schofield, Le Vera	Bellevue
St. Clair, Beatrice	Fort Collins
Seaman, Henrietta	Fort Collins
Shantz, Frank	Fort Collins
Sheely, Lois	Fort Collins
Sherred, Vera	Timnath
Shields, Wm.	Fort Collins
Starks, Hazel	Fort Collins
Strock, Wm.	Fort Collins
Toomey, Geo. E.	Fort Collins
Troutman, Lydia	Fort Collins
Woods, Villa	Fort Collins
White, Mary E.	Denver
Wilkin, Esther	La Porte
Wilkin, Ruth	La Porte

SUMMARY

College Students—		
Graduate Students	3	
Seniors	60	
Juniors	86	
Sophomores	101	
Freshman	221	
Unclassified	44	
Total	———	**515**
School of Agriculture and Domestic Science—		
Fourth Year	16	
Third Year	65	
Second Year	116	
First Year	221	
Total	———	**418**
Music	114	
Farmers' Short Course	40	
Housekeepers' Short Course	41	
Twice Counted	33	
Total on the Campus	———	**1,128**
Agricultural Extension Service	100,768	
Twice Counted	81	
GRAND TOTAL	———	**101,817**

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